

S/S. 28 Jan 83
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C1, FM 6-20
HEADQUARTERS
DEPARTMENT OF THE ARMY
Washington, DC, 9 January 1980

FIRE SUPPORT IN COMBINED ARMS OPERATIONS

FM 6-20, 30 September 1977, is changed as follows:

1. New or changed material in the appendixes is indicated by a vertical bar. The introduction and chapters 1 through 8 contain many doctrine changes; therefore, those changes are not marked with a vertical bar.
2. Remove appendixes K and M. Using pen and ink, change appendix L to read appendix K.
3. New appendixes L, M and N added.

Posted 11/28/80
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Index 1 through Index 23

4. File this change in the front of the publication for reference purposes.

By Order of the Secretary of the Army:

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S/S 28 Jan 1983 unclassified/Limited
Kept in Army Studies
*C 1, FM 6-20

Field Manual
No. 6-20

Headquarters
DEPARTMENT OF THE ARMY
Washington, DC, 30 September 1977

Fire Support in Combined Arms Operations

Note to the User

FM 6-20, *Fire Support in Combined Arms Operations*, is a special new manual in the How-to-Fight series. It provides the first comprehensive treatment of the maneuver commander-fire support coordinator (FSCOORD) relationship and illustrates how to integrate all fire support into combined arms operations. It was written by maneuver and fire support personnel, with input from elements throughout the Army, and is designed for use by **all members of the combined arms team**.

The **doctrine** herein is **approved for training** and forwarded for implementation Army-wide. To increase the manual's utility in daily training and operations, an encyclopedic index is provided.

FM 6-20, the maneuver commander's and fire support coordinator's total fire support manual, FM 6-20-1, *Field Artillery Cannon Battalion*, and FM 6-20-2, *Division Artillery, Field Artillery Brigade, and Field Artillery Section (Corps)*, discuss tactics and operations at specific field artillery levels of organization.

Users are encouraged not only to read FM 6-20 but also to use it regularly and submit changes to improve its accuracy and clarity. Recommended changes should be forwarded on DA Form 2028 to:

Commandant
US Army Field Artillery School
ATTN: ATSF-TD-TM
Fort Sill, OK 73503
(AV 639-4679/4902)

***This FM supersedes FM 6-20, 30 August 1973; TC 6-20-1, 12 May 1975; and TC 6-20-2, 12 April 1975.**

It's not big armies that win battles...

It's the good ones.

— Marshal Maurice de Saxe



**FM 6-20 is a
How-to-Fight
Manual. It is the
Fire Support
Capstone
Manual for the
Combined
Arms Team.**

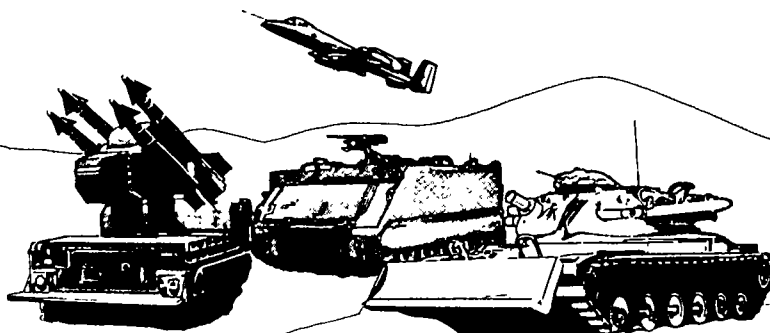
Fire support (FS) is the collective employment of mortars, field artillery, close air support (CAS), and naval gunfire (NGF) in support of a battle plan. These weapon systems are the parts of the total fire support system that provide long-range, responsive, flexible combat power. Combat power is also increased by intelligence, deception, and obstacles, to name a few multipliers. However, the two primary elements of combat power are maneuver and firepower. Hence, the equation—

**MANEUVER + FIREPOWER =
COMBAT POWER**

Firepower includes *all* the weapons—direct and indirect—available to the commander. Indirect fire weapons and close air support aircraft (i.e., fire support) provide the greatest portion of that firepower.

The skillful maneuver commander and field artillery commander, who is the fire support coordinator, integrate fire support, direct fire, and maneuver into the battle plan concurrently. While the maneuver commander is responsible for the integration of all fires with maneuver, the FSCOORD is his principal assistant for the proper integration and application of all fire support. Working together, the maneuver commander and his FSCOORD can generate the maximum combat power available.

THE COMBINED ARMS TEAM



This manual is a comprehensive fire support book written by *maneuver* and *fire support* personnel for every member of the combined arms team—the commanders and their staffs—Army, Air Force, and Navy, on any battlefield in any part of the world.

FM 6-20 is designed to be the single source reference for fire support planning and coordination in the field and at service schools—it is the base document for fire support training throughout the Army.

This manual describes in detail how firepower is generated by the fire support system. It illustrates how to use proper principles, tactics, techniques, and procedures, thoroughly integrated into the scheme of maneuver, to significantly enhance combat power for the combined arms team. The maneuver doctrine and tactics used in FM 6-20 are based on FMs 100-5, 71-100, and 71-2. The scenarios in various chapters are also patterned after maneuver HOW-TO-FIGHT manuals.

FM 6-20 EXPLAINS TO THE:

Maneuver Commander

☐ What the fire support system is and what it can and cannot do.

- ☐ How to generate maximum combat power by integrating maneuver and fire support planning and execution concurrently.
- ☐ How to effectively use field artillery commanders, fire support officers, and fire support team chiefs as fire support coordinators.

Field Artillery Commander

- ☐ How to integrate fire support into combined arms operations.
- ☐ How to support the maneuver commander's battle plan with long-range, flexible, responsive fires.
- ☐ How to optimize the fire support system effects.

In any fight, it's the first blow that counts; and if you keep it up hot enough, you can whip 'em as fast as they come up.

— General Nathan Bedford Forrest

The mission of the US Army is to win the next war. The challenge is how to insure that our combat forces are ready to meet the demands of that mission now!

The greatest insurance for winning is obtained through training—training the way we will fight and at the level where we will fight.

We can best increase the effect of combat multipliers by training in situations and environments that closely approximate probable combat conditions. The brigade area is where the action will be and where the application of combat power is the most critical. It is logical, therefore, that the culmination of combined arms training should be at the brigade level—training the team that will fight together to instill confidence and to build the *offensive spirit* necessary for ultimate battlefield success.

A principal theme that pervades FM 6-20 is *concurrent* (maneuver and fire support) training, battle planning, and execution. *The brigade commander who hands the battle plan to his direct support (DS) battalion commander and tells him, "Support it," will probably waste combat power, lives, and equipment.* It is imperative that commanders understand the capabilities and limitations of the fire support system and how those factors affect combat operations. Accordingly, the eight chapters are written for *all* members of the combined arms team in combat operations at *every* organizational level. They contain detailed discussions on how to maximize the fire support system in the offense, in the defense, in nuclear and chemical operations, and in training.

Use FM 6-20 with:

FM 100-5, *Operations*

FM 71-100, *Brigade and Division Operations (Mechanized and Armor)*

FM 71-2, *The Tank and Mechanized Infantry Task Force*

FM 71-1, *The Tank and Mechanized Infantry Company Team*

FM 7-7, *The Mechanized Infantry Platoon/Squad*

FM 7-10, *The Rifle Company*

FM 7-20, *The Battalion (Infantry/Airborne/Air Assault/Ranger)*

These FMs and others to be published (FM 71-101, *Brigade and Division Operations (Infantry/Airborne/Air Assault)*) are all *how-to-fight manuals* that complement and support each other.

The appendixes are for field artillery commanders and their staffs for use in managing and operating the fire support system. They contain the technical detail required to implement the guidance in the chapters.

FM 6-20 integrates the fire support system and maneuver at all levels. FM 6-20-1 addresses the battalion interface with maneuver and the operation of the battalion in combat in great detail. FM 6-20-2 addresses the same aspects as FM 6-20-1 but at a higher level.

Recent dramatic advances in munition technology have and will increase the total force firepower potential on the battlefield. Consider the future commander who has at

his fingertips the power of the latest antitank guided missiles (ATGM), the cannon-launched guided projectile (Copperhead), HELLFIRE, MAVERICK, the family of scatterable mines (FASCAM), and dual purpose improved conventional munitions (DPICM). Couple this with the tactical fire direction system (TACFIRE), which electrically automates the coordination and application of these weapons over the battlefield; and consider laser designators, which allow pinpoint accuracy of field artillery and Air Force weapons on moving vehicles well beyond direct fire range.

The total integration of fire support may in fact preempt the forms of combat we now know. For the maneuver commander, this means he can punish and perhaps stop an enemy without placing more forces against him where the enemy's direct and indirect massed fires are more effective. An outnumbered force cannot afford to play the game of direct, head-on confrontation.

If you are a member of the combined arms team, FM 6-20 is your manual. It is in looseleaf format to permit product improvement as the need arises. Write and tell us how we can make this book better so that we can fight and win if called upon.

FIELD MANUAL No. 6-20

FIRE SUPPORT IN COMBINED ARMS OPERATIONS

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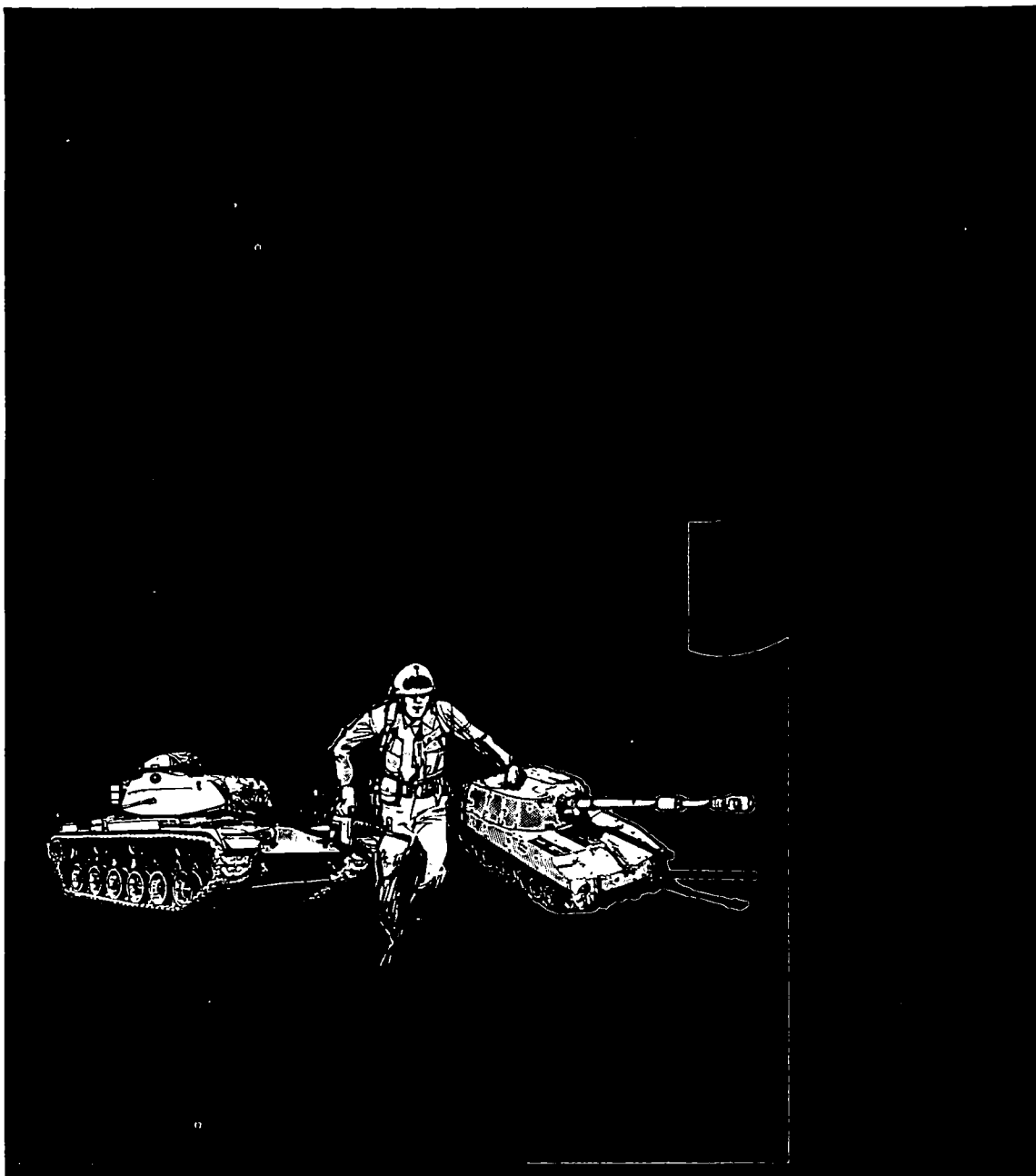
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Unless otherwise noted, where the third person singular is used in this publication, the word "he" will be understood to stand for both masculine and feminine genders.



Fire Support on the Battlefield

*The instruments of battle are valuable
only if one knows how to use them.*

— Ardant du Picq

1-1. Battlefield Characteristics

WHY

- Maneuver and field artillery commanders must collectively generate more combat power than the enemy when and where the battle is fought.

WHAT

- This chapter is an overview of:
 - battlefield characteristics;
 - what the fire support system can do for maneuver;
- the maneuver commander/field artillery commander relationship;
 - fire support system characteristics;
- how fire support facilitates direct fire and maneuver;
 - how to exploit fire support; and
- fire support management initiatives.

If war begins, we will face a tough, capable, numerically superior adversary. Operations will be accelerated and decisionmaking time will be shortened. The threat of nuclear/chemical war will be constant, and lethality and violence will be greater than in previous battles. The first battle will be fought by those forces already at the scene, with little time for detailed preparation, extensive buildup, or deployment of additional combat units. This situation has caused battle execution to shift from corps to division and, more specifically, to the brigade, where the battle will actually be fought. Such a situation generally describes central Europe and the Middle East, but worldwide circumstances impose a broader, more demanding mission upon our Army:

We must be well trained and prepared to fight anywhere on the globe, in any intensity of warfare, and in any battlefield environment. This can be a short, violent war with little warning against large forces or a long war with some warning allowing a buildup between opposing forces. Our divisions—infantry, mechanized infantry, armored, airborne, and air assault—must be prepared for combat in built-up areas; for amphibious, guerrilla, nuclear, and chemical operations; and for desert, arctic, jungle, and mountain warfare. Succeeding chapters and appendixes describe fire support principles and techniques for worldwide contingencies.

1-2. What the Fire Support System Can Do for Maneuver

The mission of the fire support system is to suppress, neutralize, or destroy surface targets with indirect fires and close support aircraft using guns, cannons, rockets, bombs, and missiles. The fire support system provides close support for maneuver forces, counterfires, and other fires as required. These fires range from suppression of antitank guided missiles to suppressing enemy air defenses. They neutralize or destroy enemy attack formations or defenses or destroy targets deep in the enemy rear with long-range missile fires. Fire support can be conventional fires in a company zone or massive nuclear and chemical fires across a corps front.

Close support fires engage enemy troops, weapons, or positions that are threatening or can threaten the force in either the attack or the defense. Close support enables the commander to *rapidly multiply* combat power effects and shift fires quickly about the battlefield. The division commander weights close support for his maneuver force by assigning tactical missions to the field artillery—direct support (DS), reinforcing (R), general support reinforcing (GSR), or general support (GS). He determines priorities for close air support (CAS) sorties to insure covering the most critical areas. These missions or priorities make fire support immediately responsive to the *brigade commanders* and to the division commander. Close support fires can provide a more favorable combat ratio. Smoke obscures enemy vision, and HE (high explosive) with fuze VT (variable time) and DPICM cause his tanks to button up. This reduces his observation, flexibility, and command and control ability; it also isolates portions of his force, allowing concentration of our direct fires on isolated targets. Close support expands battlefield depth, erodes enemy

forces, and inflicts damage well beyond direct fire ranges.

Counterfires attack enemy indirect fire systems to include mortar, artillery, air defense, missile, and rocket systems. Observation posts and command and control facilities are also counterfire targets. Counterfire is accomplished with mortars, cannons, guns, and aircraft. These fires are planned and executed for offensive and defensive operations, or they respond to an immediate request from a maneuver commander.

Other fires such as interdiction, suppression of enemy air defenses (SEAD), nuclear, and chemical fires are provided by the fire support system as needed.

1-3. The Maneuver Commander and Field Artillery Commander Relationship

Two fundamentals pervade this manual: the relationship that must exist between the maneuver commander and the field artillery commander, and the spirit of the offense that insures ultimate battlefield success.

☐ Maneuver Commander and His FSCOORD

The div arty commander coordinates the close air support allocated to the division; he commands the FA battalions organic to the division; and he controls those in the FA brigade habitually associated with the division. As the division commander's FSCOORD, the div arty commander recommends where and when to concentrate the division's fire support and the tactical missions to be assigned to FA units. He *recommends* to the commander which maneuver elements should get minimum fire support assets and which should get all

available assets. Large operations and unprecedented frontages—in both the main battle area (MBA) and the covering force areas (CFA)—will demand his constant effort to recommend priorities for scarce fire support assets, to guard against wasteful shooting, and to know when to mass and when to reposition assets.

With this in mind, an effective relationship between commanders and their FSCOORDs from corps to company team, is essential to insure the complete application of all available combat power. The maneuver commander must understand his fire support system and how to integrate it with his maneuver forces. The FSCOORD must understand the need of the force throughout the battle and the techniques needed to run the system at full efficiency.

The relationship between the force commander and his FSCOORD begins as they jointly execute combined arms training and evaluation. It continues as they work together to develop their battle plans, and it reaches fruition when a mission is assigned or assumed and the real battle is planned, fought, and won. In all this, both must know how fire support multiplies the combat power of the combined arms team.

There is still a tendency in each separate unit . . . to be a one-handed puncher. By that I mean that the rifleman wants to shoot, the tank to charge, the artilleryman to fire . . . that is not the way to win battles.

— MG George S. Patton, Jr., 1941

The payoff for this joint planning and execution of operations is the *realization of total force potential* rather than wasting combat power through piecemeal application and a poorly operating combined arms team.

□ The Spirit of the Offense

Ultimate battlefield success comes from offensive action. Although the onset of combat in Europe, for example, would be a defensive action, that battle must be fought with an offensive spirit. The offense embodies those qualities of combat that cause a positive decision. It permits initiative. As the tide of battle shifts, it allows our choice of objectives, direction of attack, timing of action, and creation of opportunities. With the initiative goes high morale, which promotes confidence and the vigorous execution essential to successful combat.

1-4. Fire Support System Characteristics

Allocating fire support is a critical decision for the commander. He will probably experience simultaneous attack from both indirect and direct enemy fires—and may not have enough assets to fully respond. He can get the maximum benefit from what he has by understanding essential fire support characteristics.

Massed Fires. The most unique and significant generator of immediate combat power is the ability of US fire support to mass fires—many elements firing accurately on the same target. These fires meet the enemy advance and wear his forces down far from maneuver forces. They disrupt movement and slow the attack through the covering force area. They disorganize and disrupt formations massed for the main attack. They erode and slow second echelon and reserve units before they join the battle. There are fast massed fires and planned massed fires.

□ Fast massed fires—rounds from all available weapons to support an immediate

tactical requirement—respond to an unforeseen problem, and available firing units in range shoot when ready. These fires can come from any support means in the area.

□ Planned massed fires—rounds from designated weapons at a time and place directed by the commander—impact in a much shorter period in the area we have selected, the area where our fires will damage the enemy the most. They require some planning time to achieve maximum shock and destruction effects.

The enemy achieves massed fires by placing a large array of artillery units at the position end of the trajectory. This results in heavy volumes of fire at the business end, and he has the assets to do this. To us, mass is hundreds of rounds at the business end of the trajectory—delivered from many battalions from many different locations. The division artillery commander does this because the ultimate coordination of massive firepower rests with him. Our massing capability results from a flexible responsive fire support system measured in terms of quality rather than quantity.

Responsiveness. Fire support suppresses direct and indirect fire weapons, exploits vulnerabilities, or reduces attack momentum across a wide front. Fast operations and weapon lethality demand responsive fires to attack fleeting targets, reduce formations before they attack or disperse, and react to short decisionmaking time. In combat, seconds are precious. Unresponsive fire support cannot be tolerated—it will result in lost lives and battles.

Survivability. It is essential that fire support units survive on a mobility- and firepower-dominated battlefield. The

combined arms team depends on it for success. Nuclear-capable fire units are priority targets for enemy fires. Most field artillery units are nuclear-capable—the same units that provide close support and counterfire. We reduce the enemy detection and position-fixing capability through positioning, avoiding predictable activities, disciplined fire control procedures, electronic warfare (EW), and operations security (OPSEC). OPSEC must be considered for each operation. It includes *deception*, *physical security*, *signal security*, and *information security*. OPSEC increases our chances for survivability, and it helps to achieve surprise against enemy forces.

Mobility. Fire support is as mobile as the supported force. When a brigade or task force maneuvers against the enemy, fire support moves in depth and laterally across the zone. Battle planners must anticipate the movement requirements of their fire support means as well as maneuver movements. An important ingredient of fire support mobility is weapons range. Long-range fires “move” rapidly across the battlefield with minimum unit displacement. Still, unit mobility is necessary to reposition forward in support of an attack or laterally and in depth to defeat a threat or a penetration anywhere in the zone of the supported or adjacent force. Mobility is critical to preserve the integrity of our combined arms teams.

Flexibility. To fully exploit the fire support system, it may be necessary to innovate and to modify established procedures. The mission is paramount: when fast attack with less accuracy will pay dividends, we must do that; when highly accurate fires are most effective and speed is less essential, we must strive for pinpoint precision.

1-5. How Fire Support Facilitates Direct Fire and Maneuver

The tank is a prime weapon system for forcing the land battle decision—but it cannot win alone. Fire support is also an aggressive and decisive system. It fragments the enemy's combined arms team by isolating combat vehicles from support elements. His tank can be transformed from a powerful fighting machine capable of exploiting mobility, shock, and firepower into an unsupported and vulnerable vehicle that can be killed by a variety of weapons. Ammunition and POL (petroleum, oils and lubricants) stocks can be reduced to further inhibit enemy operations.

Only a totally integrated combined arms force can win, when outnumbered in men and materiel, against an enemy massing his force to achieve a breakthrough in an area where his massed troops and fire support are most effective.

☐ Fire Support Facilitates Direct Fire By:

- ☐ suppressing enemy direct fire weapons,
- ☐ suppressing indirect fire weapons,
- ☐ obscuring the vision of direct fire gunners and observers,
- ☐ slowing enemy momentum to increase direct fire engagement time,
- ☐ suppressing enemy air defenses so attack helicopters can fire the TOW, and
- ☐ suppressing enemy jammers so forward observers can use their radios.

☐ Fire Support Facilitates Maneuver By:

- ☐ suppressing direct and indirect fires,
- ☐ screening and isolating objectives,
- ☐ attacking reinforcements,
- ☐ covering feints,
- ☐ covering retrograde and lateral moves,
- ☐ sealing off enemy counterattacks,
- ☐ enhancing economy of force actions, and

- ☐ providing nuclear fires when the force is in jeopardy.

This discussion does not cover all that fire support can do for maneuver or direct fires; it does indicate that effectiveness is optimized only by knowledge and imaginative weapon systems employment by commanders who fight the combined arms team.

1-6. How to Exploit Fire Support

The company team or task force commander who is under attack, and has fully committed his maneuver and direct fire capabilities, must have help—he has a short time to "service" the multitude of targets that threaten him. *The commander's greatest problem is how to exploit all available combat power at the right time and place.*

☐ The maneuver commander and his FSCOORD plan the battle together. The commander knows that fire support has a direct bearing on how the battle will be fought. Examining the fire support influence and contribution to the battle plan concurrently with maneuver considerations increases the commander's chances of using all fires. This mutual planning includes evaluation and determination of

- ☐ avenues of approach,
- ☐ weapon systems orientation/task organizations,
- ☐ objectives or defensive positions,
- ☐ methods of attack or defense, and
- ☐ time of attack or counterattack.

A commander may find in some cases that fire support considerations drive the scheme of maneuver. There may be insufficient maneuver assets to make his plan viable, or fire support may accomplish a portion of the mission without committing large troop concentrations.

☐ They determine, before the battle, where the enemy must be slowed or his positions breached so that total firepower effects are maximized for the longest time.

- They prioritize the expected enemy target array—determine what poses the greatest threat.
- They consider all weapons available to the team or task force: direct fire, ATGM, mortars, field artillery (all munitions combinations), close air support (all ordnance mixes), and naval gunfire.
- They execute. Concurrent planning begins with receipt or assumption of a mission, continues through development of the course of action, is refined in the operational concept, and is mutually executed to develop combat power.

1-7. Fire Support Management Initiatives

As stated in FM 100-5, *Operations*, future battles will be controlled and directed by division and brigade commanders. This necessitates several actions to insure that the FSCOODs for the division and brigade (the division artillery commander and the direct support battalion commander, respectively) are capable of doing their part.

Those field artillery brigades assigned to corps whose mission will be to support divisions now *habitually* associate with the divisions they will support, much as direct support battalions habitually support the same maneuver brigades. This measure improves training, coordination, and responsiveness and will result in faster fires for the division closely controlled by the division artillery commander. In addition, the supporting field artillery brigade headquarters gives the division fire support system an added control capability in management of fire support in all operations.

The division artillery tactical operations center (TOC) has been reorganized and augmented for counterfire management. This provides the commander and the FSCOOD the single source management of the division counterfire program. The TOC is

responsible for collecting data, targeting, and applying the best fire support means to defeat the threat.

At the other end of the spectrum, a fire support team (FIST) is provided to each maneuver company. The FIST chief, an FA lieutenant, is the company team commander's FSCOOD. Like his FSCOOD counterparts at task force, brigade, and division, he plans and coordinates all the fire support means available to the company. This includes mortars, field artillery, close air support, and naval gunfire.

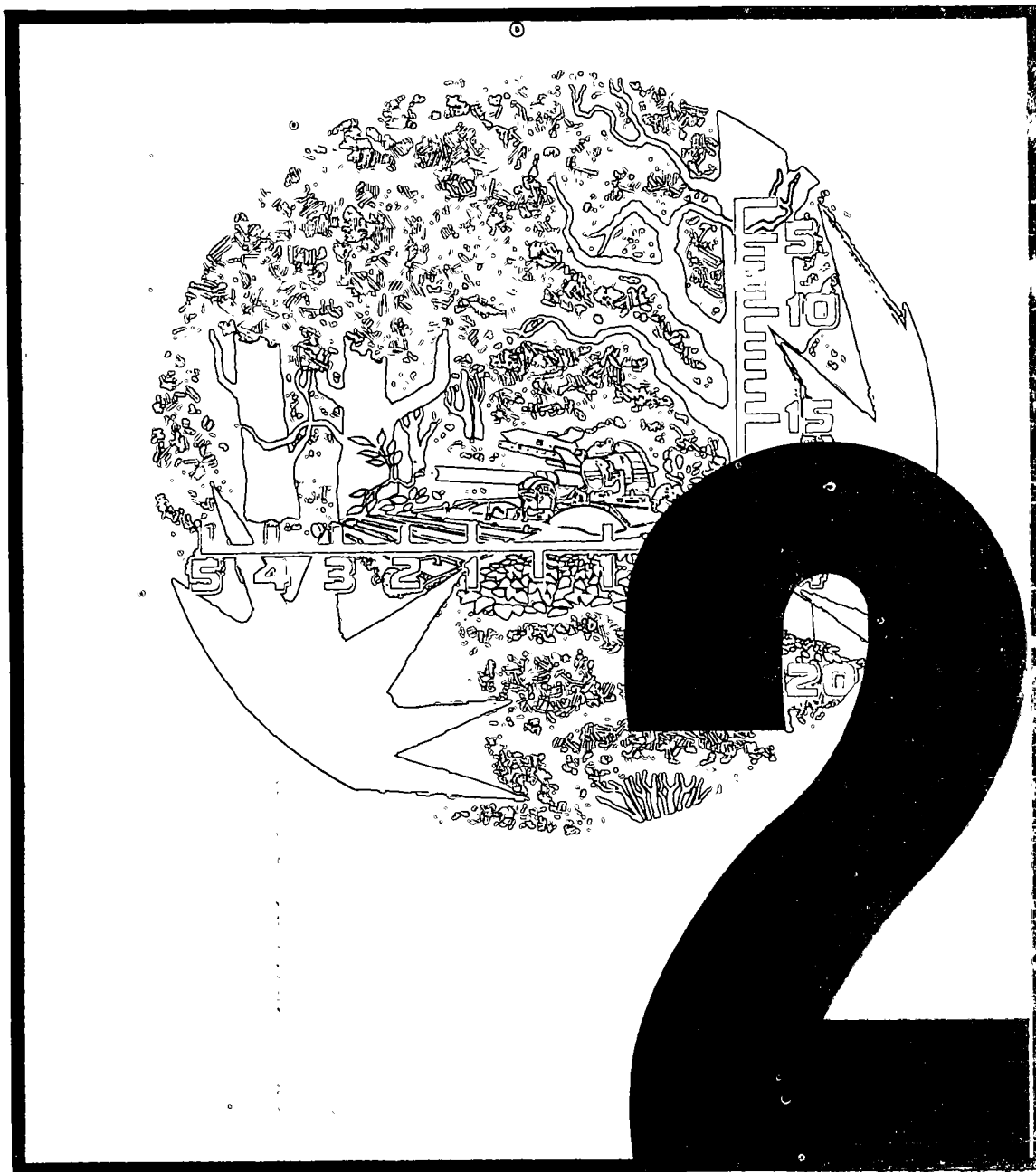
1-8. Summary

This chapter has been an overview of the battlefield and what fire support can do for the maneuver commander. The theme of the chapter and of the entire manual is the relationship required between the maneuver commander and the FA commander, his FSCOOD, and the positive attitude embodied in the offensive spirit that wins wars. To continue with General Patton's quotation:

If the band played a piece first with the piccolo, then with the brass horn, then with the clarinet, and then with the trumpet, there would be a hell of a lot of noise but no music. To get harmony in music, each instrument must support the others. To get harmony in battle, each weapon must support the other. Team play wins.

Chapter 2 discusses the unique challenge of our fire support system when we fight a numerically superior enemy. Subsequent chapters address the fire support system organization and operations, fire support for the offense and defense, nuclear and chemical operations, training, and new developments.





The Enemy

*How can any man say what he should
do himself if he is ignorant of
what his adversary is about?*

— Jomini, 1833

2-1. General

WHY

- To effectively counter enemy forces strengths and exploit their weaknesses, the combat leader must understand principal enemy doctrine, tactics, and organization.

WHAT

- This chapter discusses various enemy forces in conventional war and tells you the:
 - challenge for fire support in combat;
 - intelligence requirements for targeting;
 - mechanized/armor (heavy) enemy doctrine, tactics, and organization;
 - fire support considerations to fight the heavy enemy force;
 - infantry (light) enemy force doctrine, tactics, and organization; and
 - fire support considerations to fight the light enemy force.

The combat leader must consider the enemy in two ways—as the actual force engaged and as an anticipated force in a situation we expect to face. The latter is based on our knowledge of enemy force structure, doctrine, and employment techniques. The study of enemy forces is a method of making accurate assessments of strengths and dispositions and drawing conclusions about intentions. There are dangers associated with enemy force study. The force must not, whether actual or predicted, be viewed as a frozen “snapshot” of the battlefield. Rather, it is a dynamic entity that changes with time. Memorizing “type” forces leads to inflexible planning and execution that cannot contend with unexpected enemy force initiatives. When used with experience and terrain analysis as an indicator of the enemy’s strength, composition, and employment, enemy force knowledge becomes the basis for fluid, adaptable planning and execution. The immediate issue for the commander when studying the enemy force is how to defeat it. A force analysis tells us how to attack, what mix of direct and indirect fire to use, what types of ammunition to fire, and with which units to engage. The enemy force analysis cannot guarantee optimum fire support, but it can greatly increase the likelihood of effective fires, both direct and indirect, to support maneuver forces at the critical time and place.

2-2. The Challenge

The fire support system is organized to fight against enemy forces that vary from massed armor to light infantry. The effective employment of the fire support system against these forces is directly related to the combat leader's understanding of the enemy's:

- ☐ doctrine;
- ☐ offense and defense tactics and techniques;
- ☐ command, control, and communications procedures;
- ☐ battle formations and equipment positioning; and
- ☐ personnel and equipment vulnerabilities.

The challenge for combat leaders is to:

- ☐ know how the enemy fights;
- ☐ strip away his initiative and momentum;
- ☐ destroy his combined arms team integrity;
- ☐ fragment his massed formations and defeat them; and
- ☐ turn his vulnerabilities into our advantages.

Meeting this challenge involves targeting considerations and maneuver and fire support employment planned concurrently by maneuver and fire support leaders.

2-3. Targeting Considerations

This paragraph addresses what data are needed for target planning, munition/delivery system selection, and timely attack. To get these data, the target must be located and its nature determined in time to attack it.

☐ Target Location

An exchange of real-time intelligence/combat information between maneuver and fire support leaders is a cardinal battlefield requirement. The payoff from this exchange is that fire support agencies *accurately* and

effectively shift their fires about the battlefield as the ground-gaining forces maneuver and engage their units. Accurate target intelligence is vital to both maneuver forces and the fire support system. This is particularly true for the fire support system because:

- ☐ Surprise, massed fires are the most effective application of fire support and are not possible without accurate target locations. Surprise fires prevent the enemy from taking cover or dispersing as he does when he is warned by the adjustment of fires toward his position.
- ☐ Conventional munitions have a limited destruction radius. Therefore, targets must be located rapidly and accurately so munitions produce maximum effect.
- ☐ There will not be sufficient ammunition or fire units to attack all targets—even those with precise locations.

The FIST and organic FA target acquisition systems strive for accurate locations based on the above considerations. To fire unobserved fires on targets from other intelligence sources effectively, FA requires target locations that will fall within the effects radius of the firing unit. As the accuracy of reported target locations decreases, for example 300–400 meters from actual locations, several things happen:

- ☐ Zone or sweeping fire may be required to adequately cover the target area.
- ☐ Additional fire units and greater ammunition expenditures will be required.
- ☐ The element of surprise is lost as the enemy observes fires being adjusted onto his position.
- ☐ Maneuver and fire support locations can be compromised by radio vectoring, mortar/artillery locating radars, and sound/flash bases.

In the final analysis, target location accuracy is a function of the desired effect, the threat posed, and the status of the available fire support system to include survey, meteorology, and ammunition.

Outputs of the combat intelligence system and the FA target acquisition system are combined to provide accurate and timely target locations. The fire support system combines the estimated accuracy of target locations with the various factors relating to the weapon systems and determines *if, when, and how* targets will be engaged.

□ Target Nature

The nature of the target is an important consideration for munition and fire support means selection. The following are a few examples:

□ HE with a VT fuze is more effective against troops in the open than HE-PD (point detonating) because it covers a larger area. However, if the troops are dug in, HE-PD would be more effective because of its ability to penetrate and destroy protected positions.

□ DPICM would have a greater effect on troops in the open than either HE-PD or HE-VT because of greater area coverage. However, if the troops are in a heavily forested area or dug in, the munition selection would more properly be HE-PD or HE with a delayed fuze.

The selection of the proper munition is a decision that balances the most effective munition against the relative cost and availability of that munition and the target importance. FSCOORDs insure that the most effective munitions within availability constraints are fired. This is done by reading the battlefield with the maneuver commander and mutually insuring the greatest benefit from every round fired.

The best *mix* of fire support means to attack an enemy force must be selected. Consider a company team being attacked by T62 tanks and BMPs supported by air defense and antitank weapons. The FIST chief attacks the advancing opponent well beyond TOW range. He suppresses ZSU 23-4 and SA-9 positions with field artillery HE-VT, DPICM,

and smoke. On-station A-10 aircraft concentrate on destroying tanks and BMPs with Mavericks and GAU-8 30-mm cannons after the artillery has caused the armor to button up. Mortars in range shoot smoke projectiles behind the lead elements to obstruct command control. As the forces press forward, antitank guided missiles (ATGM) attack them while close air support (CAS) and FA engage the second echelon.

The FIST chief and the fire support officer (FSO), in coordination with maneuver commanders, are responsible for putting together these winning fire support combinations.

□ Timeliness

There is no strict rule for timeliness other than that the target information must be readily available to support the battle. Essentially, timeliness is a function of how long the target will stay where it is or when and where it will appear.

For example, a supply depot location reported 2 days ago may be more timely than the location of a moving tank column reported 2 minutes ago. The thrust of the timeliness issue is that all intelligence/information agencies must be concerned about getting data to firing units.

The measure of intelligence timeliness is how fast that information is converted into firing data that kills the enemy and supports the scheme of maneuver.

□ The Result

As a result of the targeting considerations just discussed:

□ The enemy pays heavily in personnel and equipment for every meter of his advance.

□ We inflict more damage with less commitment of our own troops, equipment, and ammunition.

□ We have more assets left for going on the offensive and making the battle go our way.

2-4. The Mechanized/Armor (Heavy) Enemy Force

The mechanized/armor force is the backbone of the enemy forces in Europe or the Middle East. This paragraph discusses various heavy organizations, tactics, techniques, and vulnerabilities. These considerations weigh heavily on decisions the commander must make as he plans for and fights the battle. No attempt is made to identify every target that will appear. Rather,

this paragraph talks in terms of *what* the enemy can be expected to do and provides a basis for determining *how* fire support can help counteract him.

□ Basic Organization

Heavy, enemy forces are organized into flexible combined arms teams of armor, motorized infantry, field and air defense artillery, and engineers. Above the division

level, the size and composition of organizations depend upon the mission and the area of operations. These higher level organizations are fronts and armies.

A *front* may contain several combined arms armies, one or more tank armies, a tactical air army, and a substantial number of combat support (CS) and combat service support (CSS) units. *Armies* are composed of a variable number of divisions. Combined arms armies and tank armies contain a

varying number of motorized rifle and tank divisions with associated CS and CSS units.

Divisions. The basic fighting force is the heavy (motorized rifle or tank) division (figs 2-1 and 2-2). This force, with its supporting elements, forms the fighting edge of the enemy force war machine and is the highest echelon with a fixed organization. The heavy division has a lean support base, and doctrine requires large stocks of supplies pre-positioned well forward.

FIGURE 2-1. HEAVY ENEMY MOTORIZED RIFLE DIVISION.

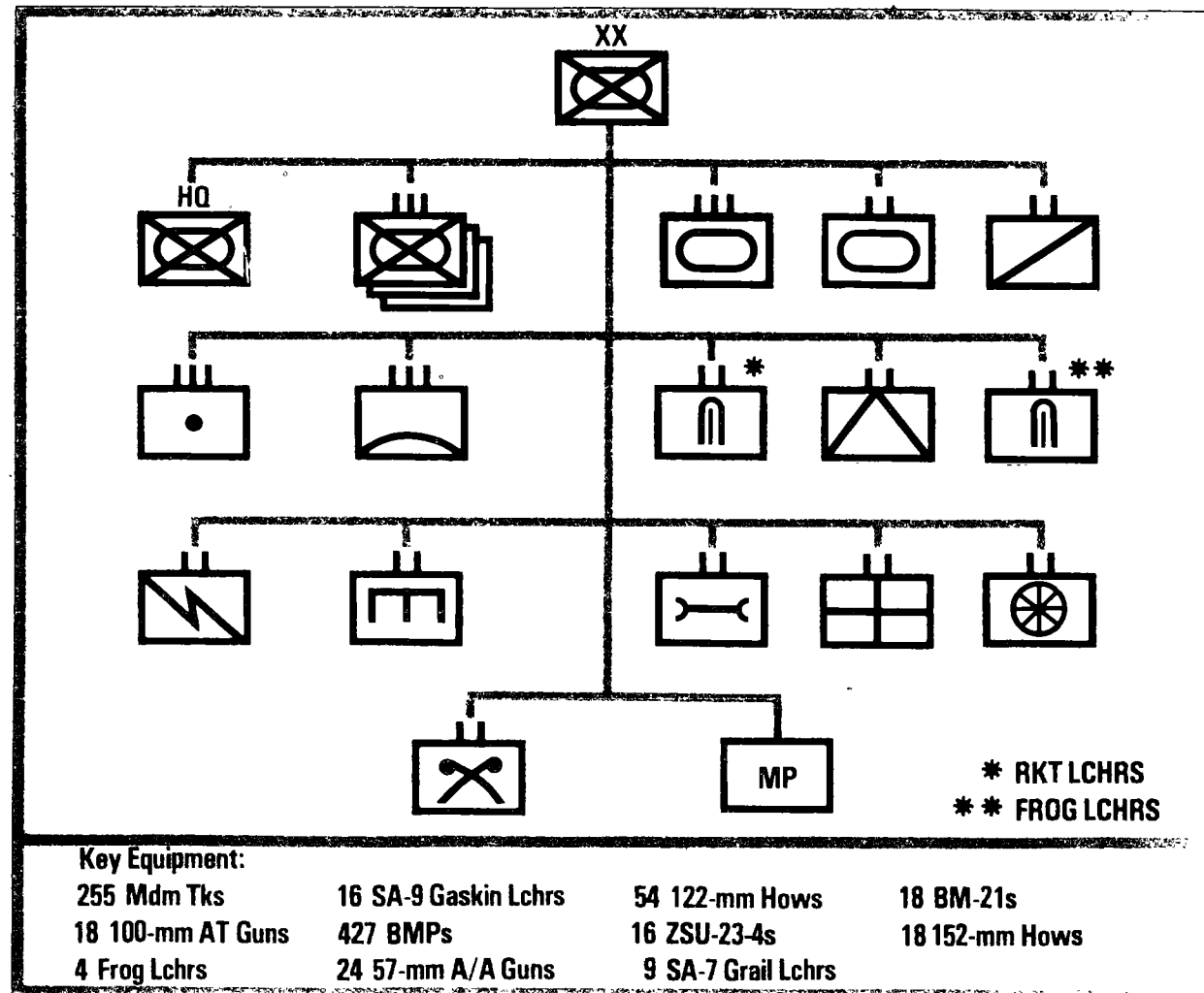
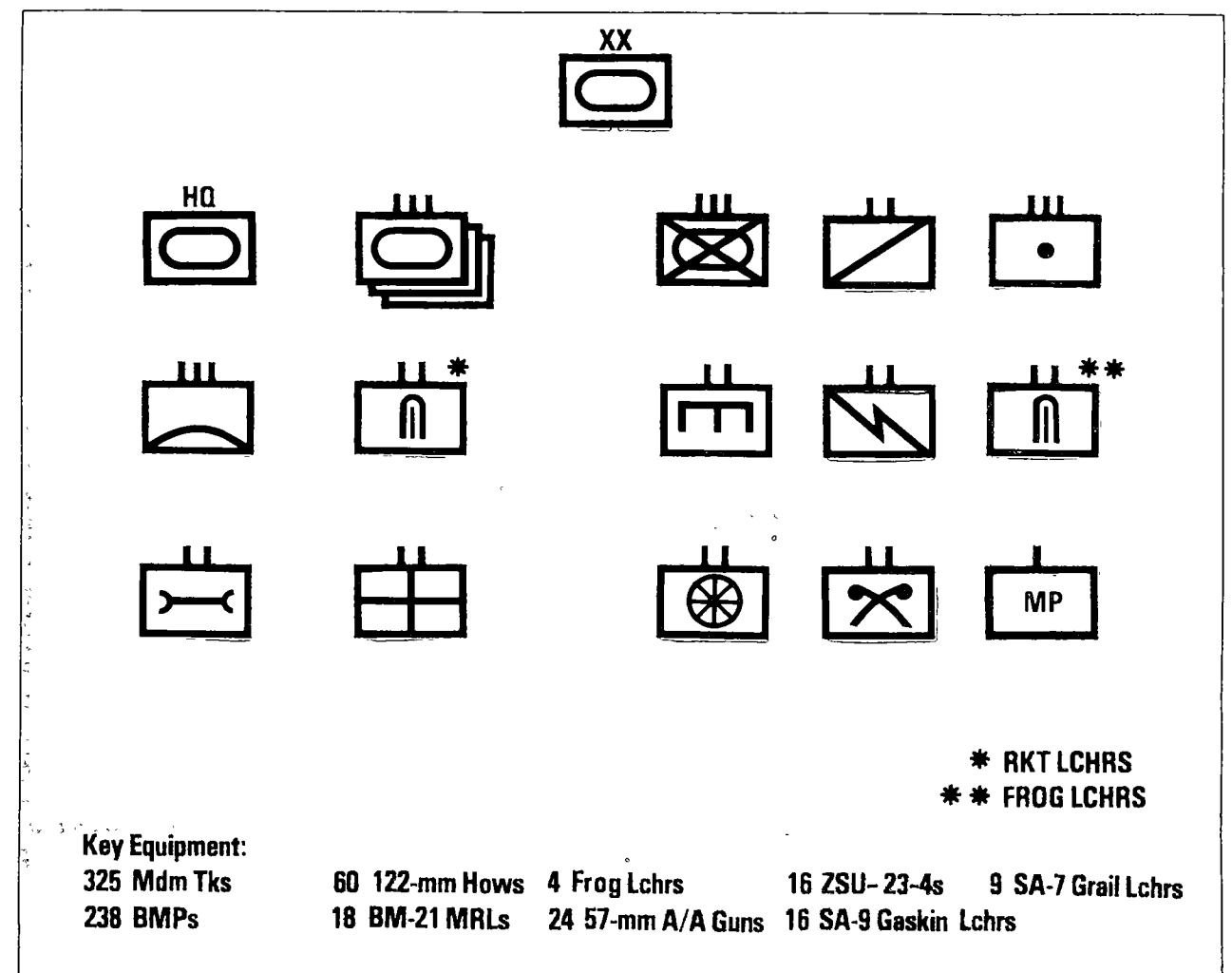
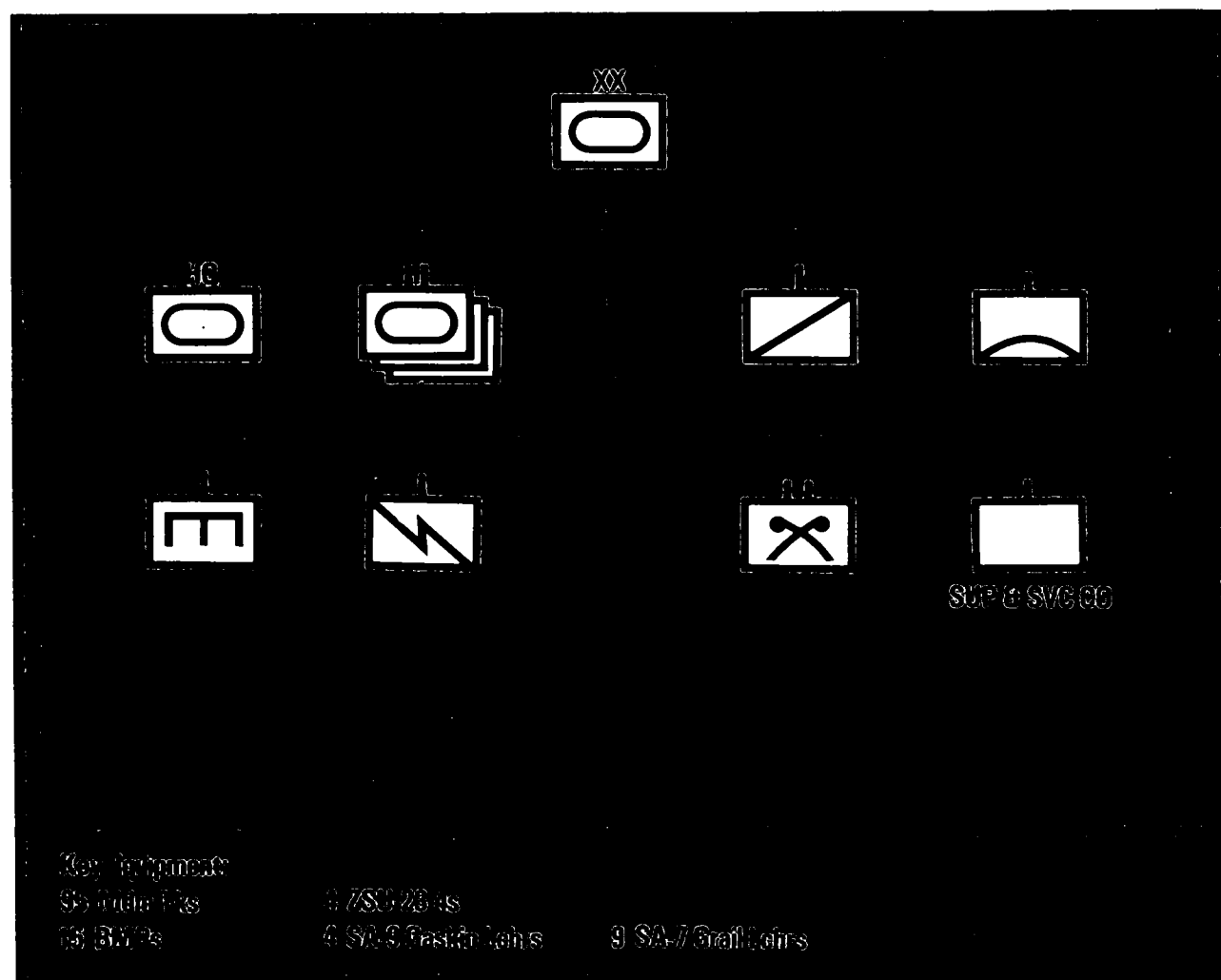


FIGURE 2-2. HEAVY THREAT TANK DIVISION.



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FIGURES 2-1 & 2-2.**

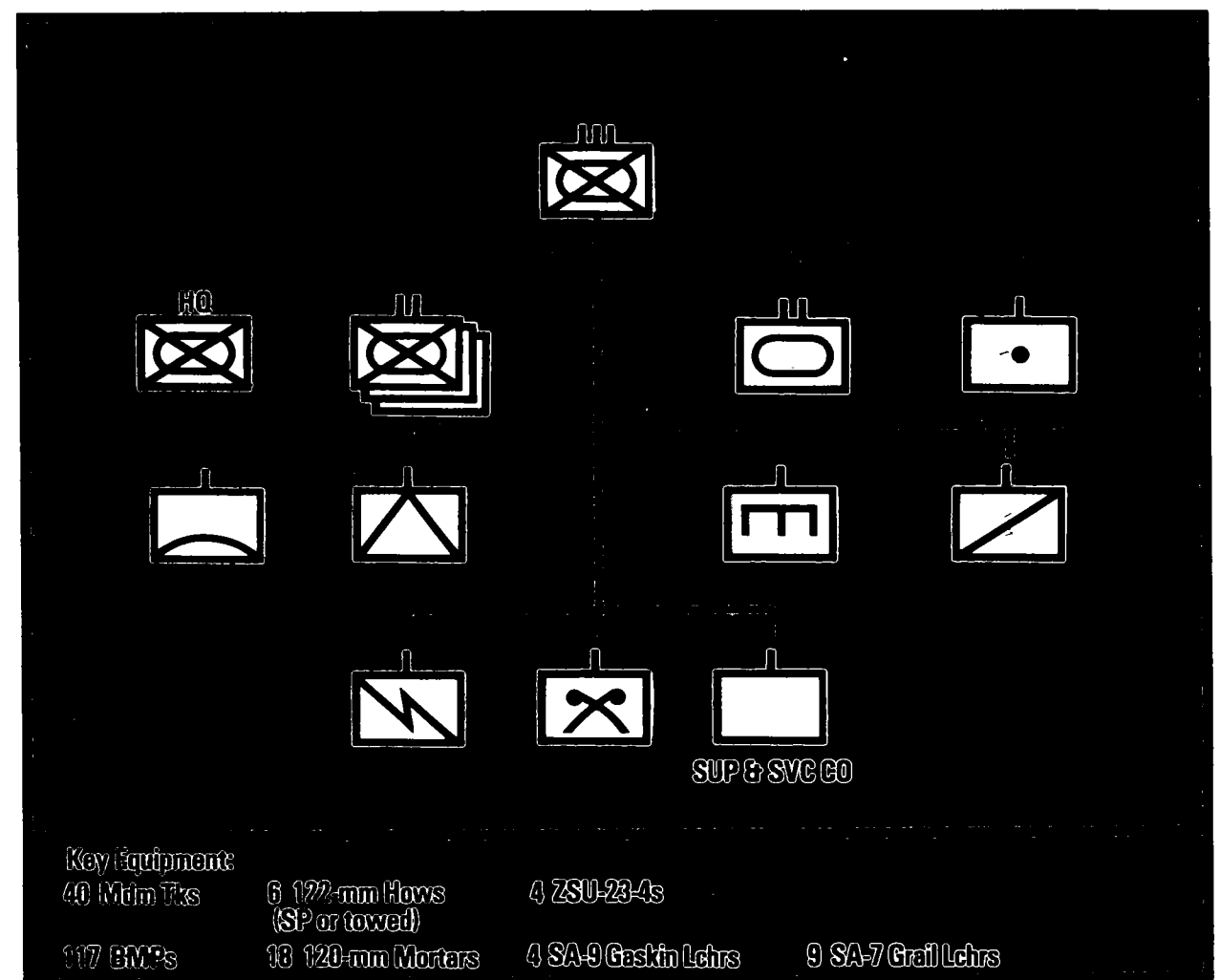
FIGURE 2-3. TANK REGIMENT, TANK AND MOTORIZED RIFLE DIVISIONS.



Regiments. Motorized rifle and tank regiments are the major subordinate fighting elements of divisions. The tank regiment (fig

2-3) is pure—three tank battalions—while the motorized rifle regiment (fig 2-4) has an organic tank battalion and a howitzer battery.

FIGURE 2-4. MOTORIZED RIFLE REGIMENT, TANK AND MOTORIZED RIFLE DIVISIONS.



*In our day wars are not won by mere
enthusiasm, but by technical
superiority.*

— Lenin, 1918

Battalions. Battalions (figs 2-5 and 2-6) are generally smaller than US counterparts. The ratio of combat soldiers to organic support personnel is quite high, and staff and communications assets are austere. Centralized planning at higher levels is emphasized, and battalions are more concerned with executing orders than planning operations. The battalion commander controls his formations with radio and visual signals, and his junior officers and NCOs are allowed little personal initiative.

FIGURE 2-5. TANK BATTALION.

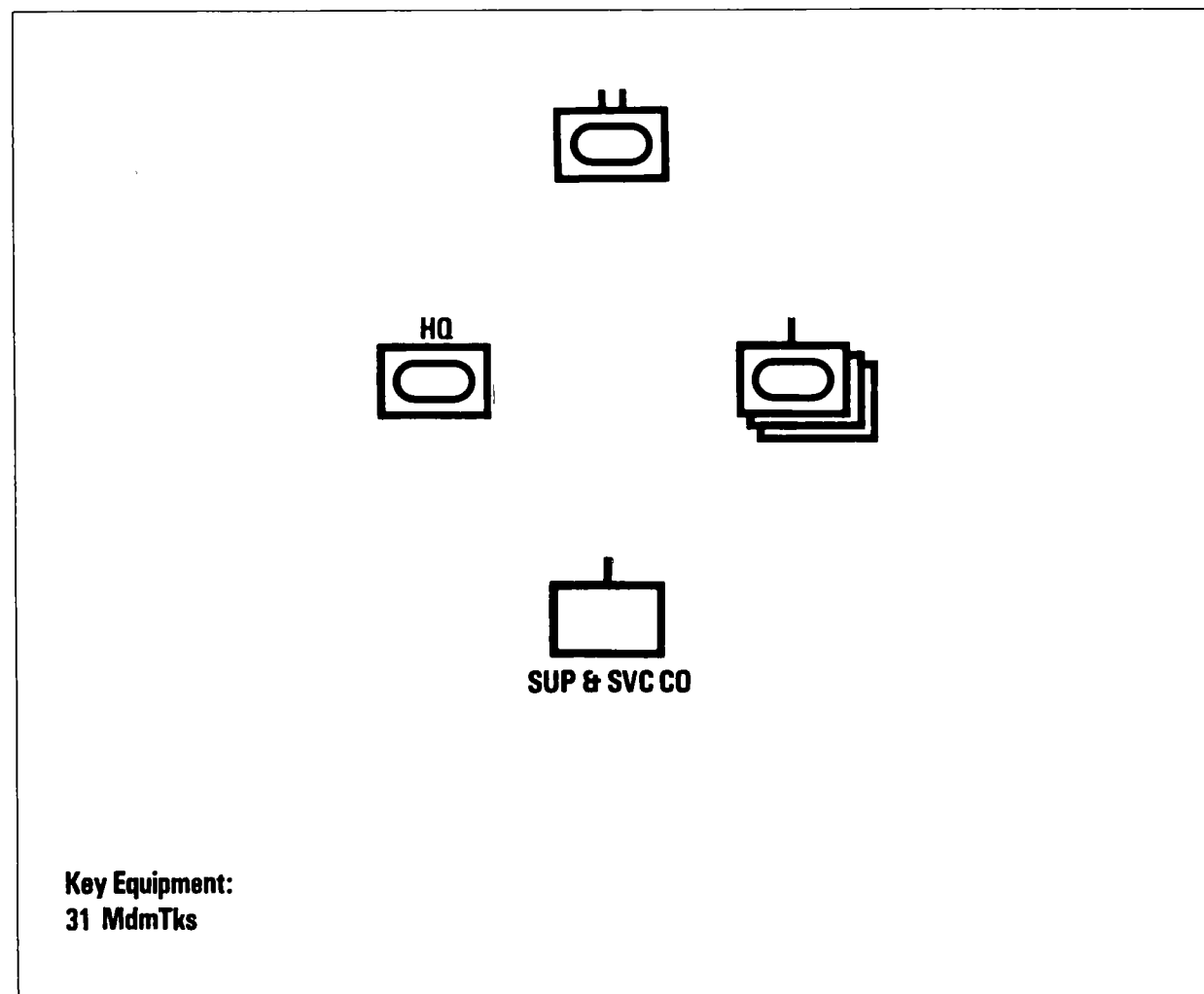
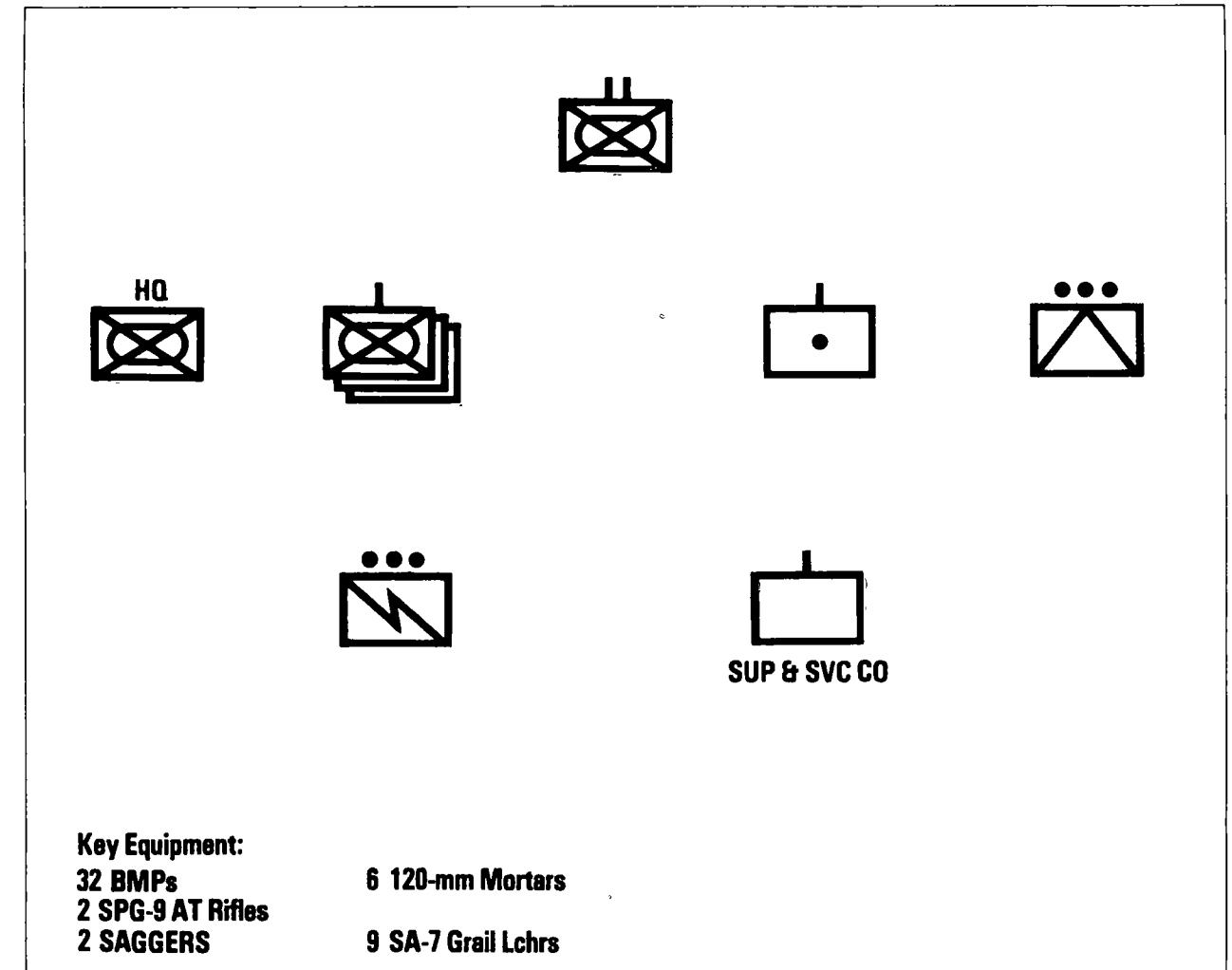


FIGURE 2-6. MOTORIZED RIFLE BATTALION.



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FIGURES 2-5 & 2-6.

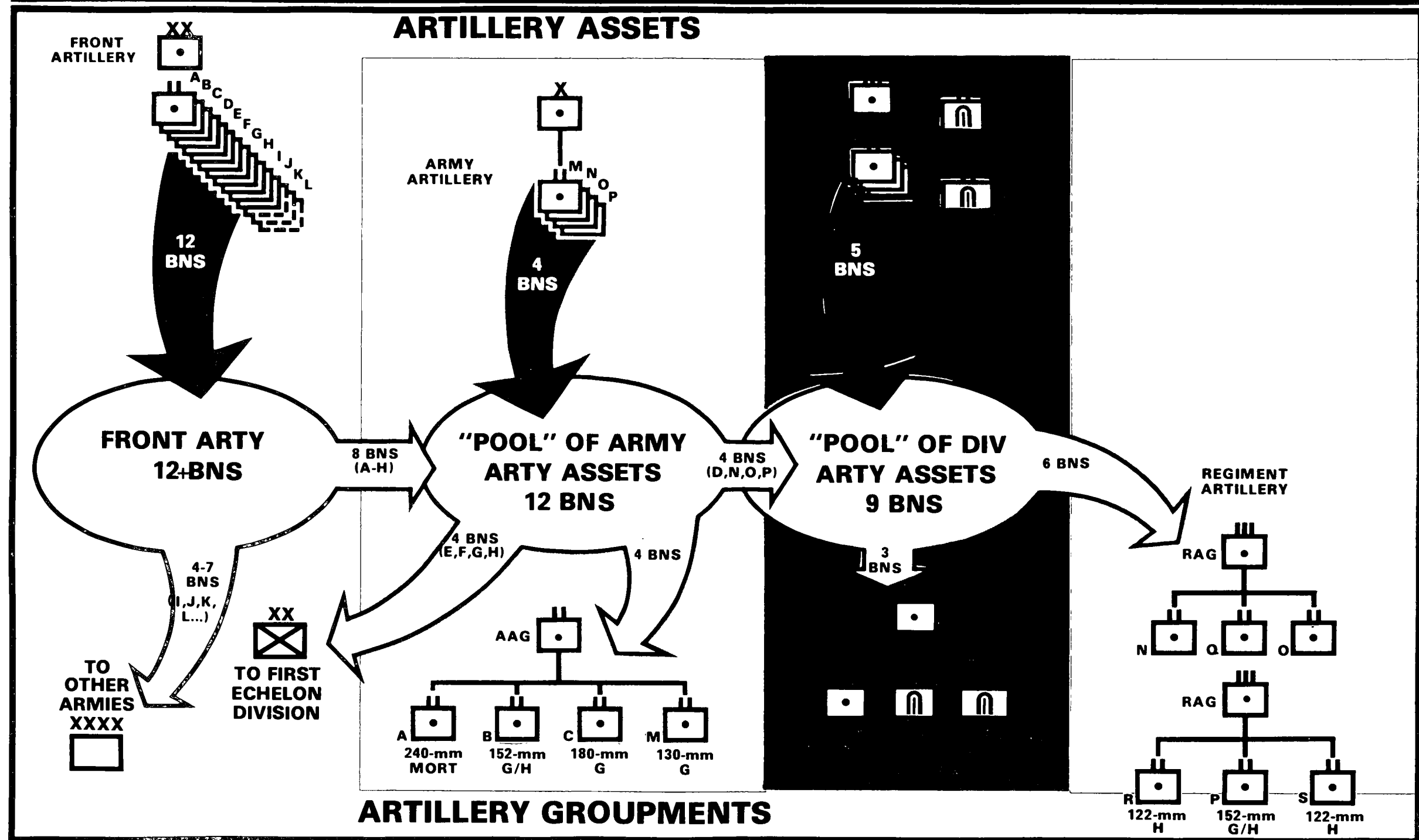
□ Artillery Organizations

At front level, an artillery division usually contains several regiments of medium artillery and larger caliber guns and mortars. At army level, there is often an artillery regiment or brigade composed of two or three medium caliber artillery battalions. The firepower from these echelons is allocated in support of maneuver divisions as discussed below. At division level, artillery regiments and multiple rocket launcher battalions are organic.

Normally, artillery battalions are controlled by provisional groups formed at the regimental, divisional, and—occasionally—army levels. Formation of these groups begins at front level (fig 2-7). The front commander allocates front artillery battalions to each committed army. *The army making the main attack or defending the most vital sector gets the most artillery.* The army commander adds these battalions to his organic artillery battalions and forms a pool. He may retain some battalions to form an army artillery group. The remainder of the battalions, including battalions from second echelon divisions and any additional artillery provided for the army commander, are allocated to the first echelon divisions. *The division executing the major army mission gets the most artillery.* The division commander goes through a similar process. He forms a pool from the army and division assets, retains some battalions, and forms

the divisional artillery group (DAG). The remaining artillery is allocated to first echelon regiments and they form the regimental artillery groups (RAG). The composition of these groups is provisional and is changed between and during operations. The purpose of these groupments is similar to US artillery's tactical mission; that is, to control the distribution and allocation of fires and weight indirect fire support in the most important areas. Artillery groups provide massive amounts of supporting artillery. The commander of a motorized rifle regiment can have four battalions of 122-mm and 152-mm howitzers immediately available in a zone 5 to 8 km wide. The regimental commander can be augmented by the divisional artillery group with two to four more battalions of 130-mm guns, 152-mm gun-howitzers, and BM-21 multiple rocket launchers. These units normally support army and front fire plans, divisional fire plans, and divisional counterbattery programs; but, if the situation warrants, the regiment will get these units. US forces will be heavily outgunned, from as much as 4 to 1 to a much higher ratio at local levels. The enemy commander can get massive close support fires and simultaneous counterbattery and interdiction fires. Also, accompanying self-propelled 122-mm gun batteries will support the maneuver force with direct fires against US strongpoints, ATGM, and other targets.

FIGURE 2-7. ARTILLERY ORGANIZATIONS.



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FIGURE 2-7. ARTILLERY ORGANIZATIONS.

□ Target Acquisition

Enemy forces have a target acquisition system at division level designed to find and locate our units. The commander employs all of his target acquisition assets to varying degrees, but in most of his tactical operations he concentrates on the electromagnetic spectrum for timely and accurate information. Radio and radar direction finders, ground surveillance radar sections, and sound and flash ranging elements—all part of enemy first echelons—have a significant capability to accurately locate our fire support units and command control centers. Their targeting data can be fed directly to firing units and, in that case, the time from "find" to "fire" is only a few minutes. Other target acquisition assets that the enemy commander routinely employs include aerial reconnaissance and ground reconnaissance elements.

□ Doctrine

Enemy doctrine derives from WWII experience and conditions expected on the battlefield. Doctrine is discussed here in terms of command responsibility, tactical principles, techniques, and frontages for the offense and defense.

Command Responsibility. The responsibilities of enemy commanders are strictly defined. All commanders through division are required to make detailed personal reconnaissance of the area of operations. They personally supervise critical actions, issue detailed orders, and closely control subordinate units through command observation posts (COP). The artillery commander is located in or near the COP and from his OP provides both tactical and technical fire control for his unit. Commanders are permitted latitude in the execution of orders only when it is consistent with the intent of the higher command. *Unity of command is practiced at all levels.* The senior combat arms officer commands the

combined arms force. Air armies supporting ground forces are commanded by the front commander, a combined arms officer.

Tactical Principles. The central tactical principle is that decisive results are achieved only through offensive action. The defense is used to gain time to resume the offensive or as an economy-of-force measure. Supporting this principle are flexible weapons mixes and tactical organizations, echelonment of forces, use of cover and deception, and use of EW systems as weapons.

Enemy forces habitually employ flexible mixes of mutually supporting direct and indirect fire weapons at all echelons. This weapons mix is enhanced by flexible combat organizations tailored to the mission at each level. The planning and execution of missions is highly centralized, but all combat formations are extremely flexible combined arms teams of armor, infantry, field and air defense artillery, engineer, antitank, and chemical defense elements.

The commander normally echelons his force in both the offense and the defense. At each level through battalion, he analyzes the situation and determines how many echelons are required for a particular operation. Two echelons are normal in the defense or offense, but one or three may be used based on the situation. In the attack, three echelons would strike a strong enemy position on a narrow front. If the defender is weak or the front broad, one echelon may be used.

Commanders maintain a small reserve at each level except company. The reserve is usually tank heavy but may consist of motorized rifle and tank units, antitank and air defense artillery, engineers, chemical troops, and other units required by tactical situations. The reserve varies in size, but is normally a platoon at battalion, a company at regiment, and a battalion at division. The reserve is the commander's contingency force for unit replacements, local security,

engagement, which includes both the advance to contact and the hasty attack; the breakthrough (deliberate attack); and the pursuit (exploitation). (Offensive formations are shown in figures 2-8 through 2-12.)

counterattacking in the defense, and exploiting or repelling counterattacks in the offense.

Offensive and defensive actions have common techniques to achieve mass, dispersion, surprise, and redundant direct and unified command control. The enemy commander achieves mass by rapidly concentrating men, materiel, and firepower. Concentration of assault or counterattack units and supporting elements is achieved by moving rapidly from march column into the assault, taking advantage of darkness or reduced visibility. Forces are concentrated only for the time necessary to accomplish the mission. When not concentrated, units are widely dispersed consistent with the terrain and anticipated employment.

Deception is used in every situation and at every level. It is used for economy of force, masking concentrations, and dissipating enemy firepower and maneuver assets. Preferred methods of deception are visual and audio. Deception plans make extensive use of camouflage, smoke, and terrain positioning.

Radioelectronic combat (REC), which is similar in some respects to US Army electronic warfare, is a means used before and during the battle to determine the location and function of all emitters used by US forces. Target priorities are assigned to the emitters. *The enemy uses REC to engage by suppressive fires or to disrupt by jamming at least 50 percent of friendly command, control, weapon, communication, and electronic systems in critical battle zones.* Communication and electronic systems used by artillery and tactical air systems are high-priority targets. Enemy radioelectronic combat units use deception, signals intercept, direction finding, jamming, and artillery in concert as an element of combat power.

Surprise is important. Under cover of strict security measures—which includes a detailed deception plan emphasizing electronic warfare—the commander concentrates his forces rapidly at the decisive point. Tactical surprise may be gained by airborne and air-landed forces; the sudden employment of massed nuclear, chemical, and conventional fires; and immediate offensive action. Exploitation of unfavorable weather and terrain, infiltration tactics, or the introduction of large tank forces into the battle also gain surprise. The success of these tactics depends on detailed and timely intelligence and target acquisition. The use of surprise depends heavily on knowledge of friendly capabilities and intentions. At all times, the enemy can be expected to employ human intelligence (HUMINT), photo intelligence (PHOTINT) and signal intelligence/electronic warfare (SIGINT/EW) to develop an all-source picture. Some examples are:

□ HUMINT

Commander's reconnaissance (forward observers).

Employment of ground reconnaissance units (forward observers).

Use of intelligence agents.

Use of local civilian population.

Combat patrols designed to harass and gain information.

□ PHOTINT

Handheld imagery.

Use of specially designed aircraft.

Other strategic airborne platforms.

□ SIGINT/EW

Use of radio and radar direction finding.

Use of jamming to cause poor COMSEC.

Use of radio/radar intercept.

Employment of radars and sensors.

Wiretapping.

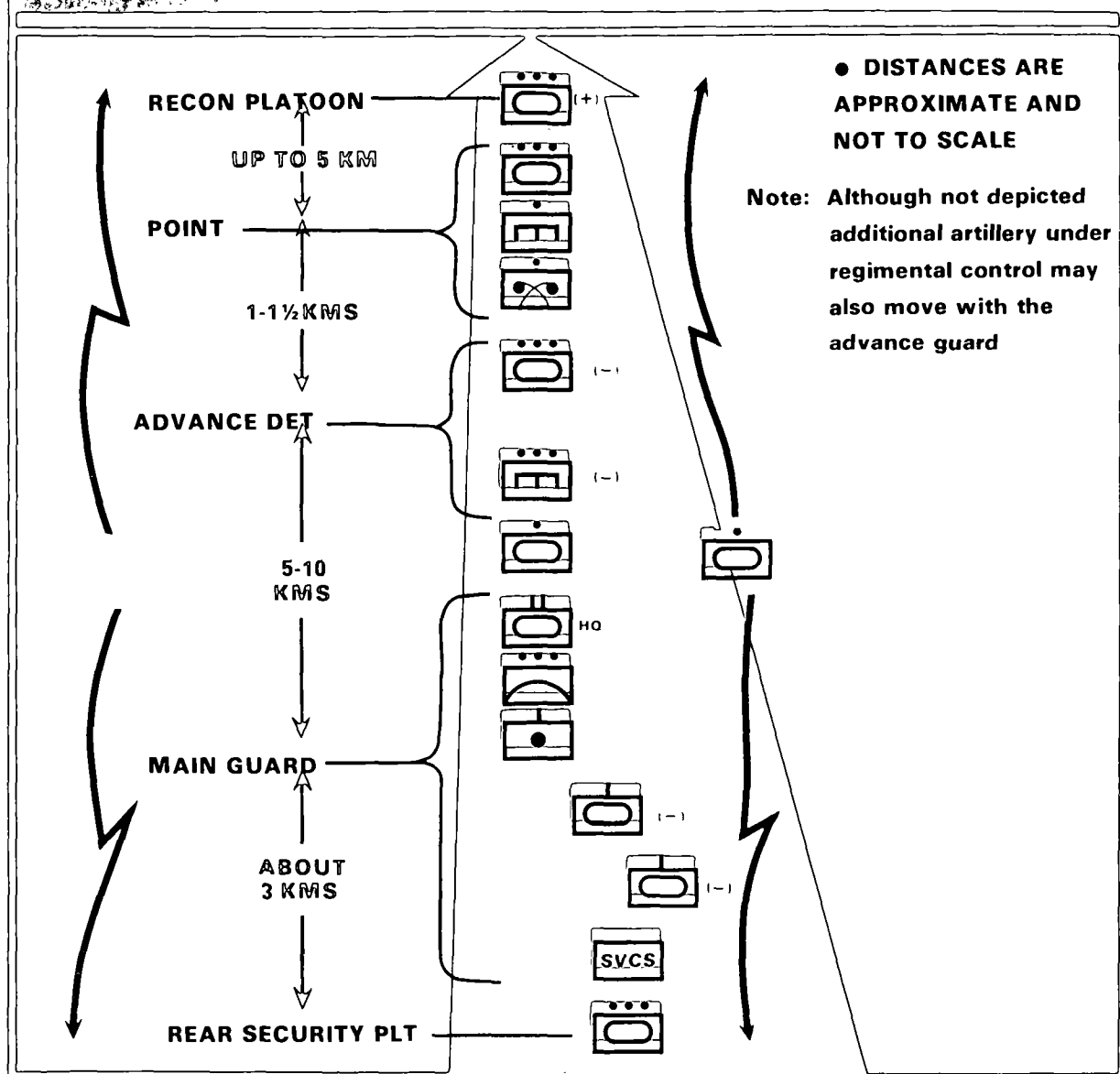
All sources of intelligence will be used before, during, and after the battle. All methods will be employed all the time in different degrees of intensity. Remember, the enemy depends heavily on surprise and uses deception as much as possible.

The command control system is highly survivable. There are duplicate communications systems, backup command posts at division level and higher, and detailed

operational planning. When coordination and reconnaissance time is limited, forces deploy in standard formations. They fully appreciate the necessity for detailed planning, but commanders believe that in a fast-moving situation, it is more important to move forward rapidly than delay to prepare and coordinate a detailed plan.

The Offense. There are three basic types of offensive actions: the meeting

FIGURE 2-8. REINFORCED TANK BATTALION AS AN ADVANCED GUARD.



The meeting engagement is expected to be the most common form of combat. It is characterized by enemy forces meeting suddenly and, according to doctrine, normally follows an advance to contact. Initial combat actions are carried out by security and reconnaissance elements. The attack starts immediately from the line of march to gain the initiative through

aggressive action and rapid force maneuver. Regimental self-propelled (SP) artillery batteries and possibly other artillery will move in column with maneuver battalions and support with direct fires. Maneuver battalions also normally will be accompanied by a ZSU-23-4 air defense battery. (Example attack formations are shown in figures 2-10 through 2-12.)

FIGURE 2-9. REINFORCED TANK BATTALION AS PART OF A REGIMENTAL COLUMN.

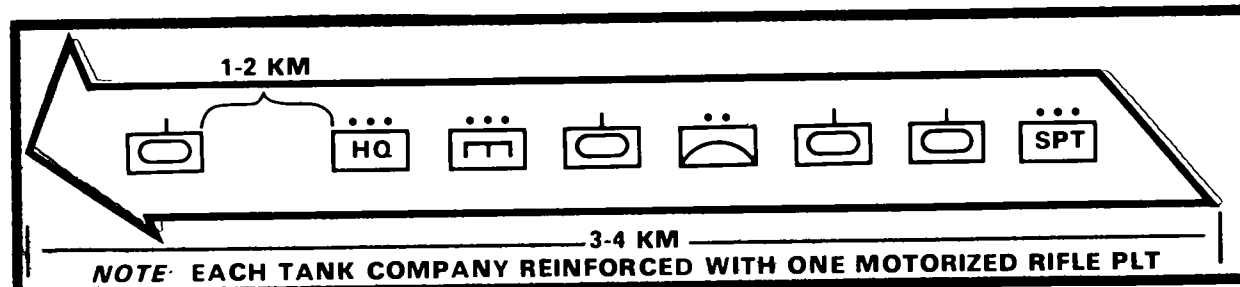


FIGURE 2-10. TANK REGIMENT IN A MEETING ENGAGEMENT.

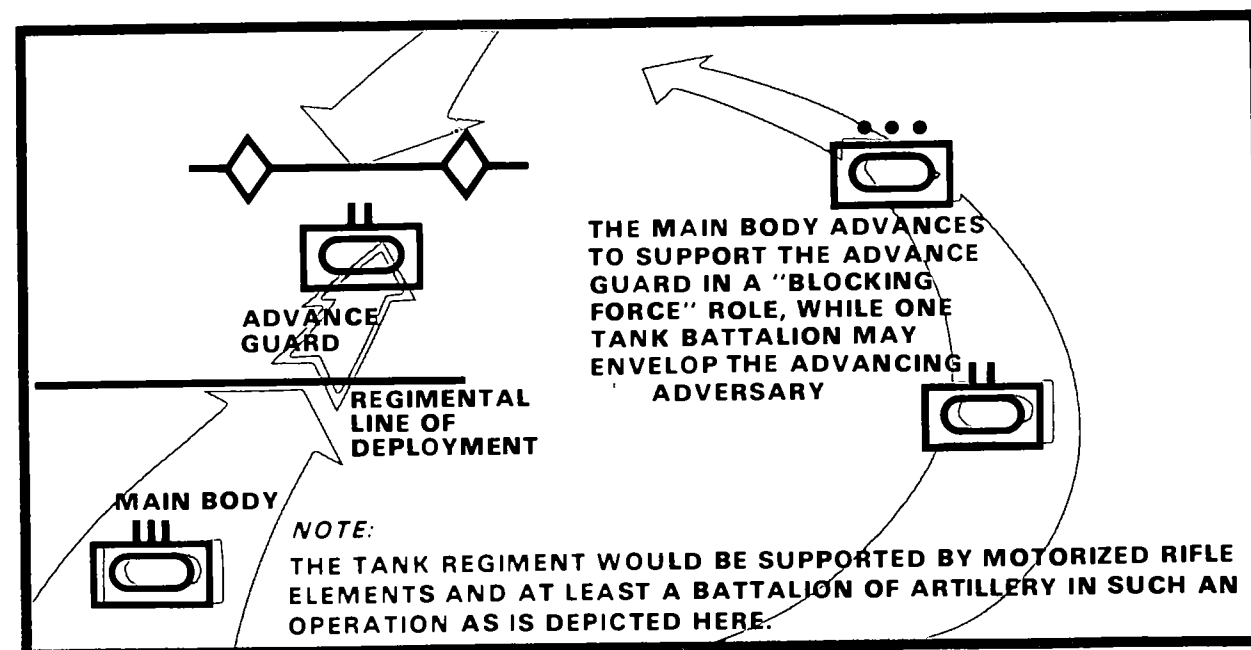
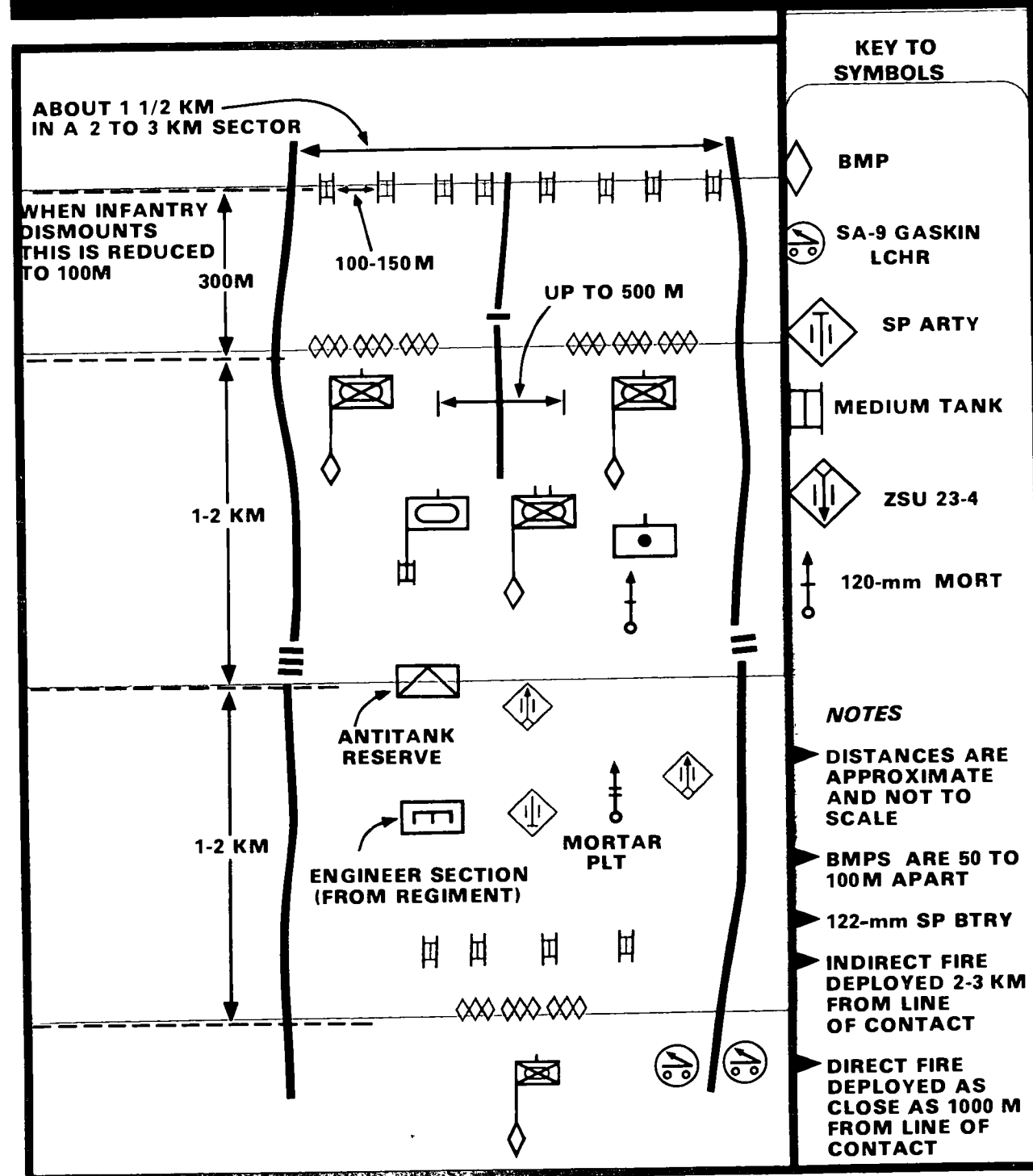
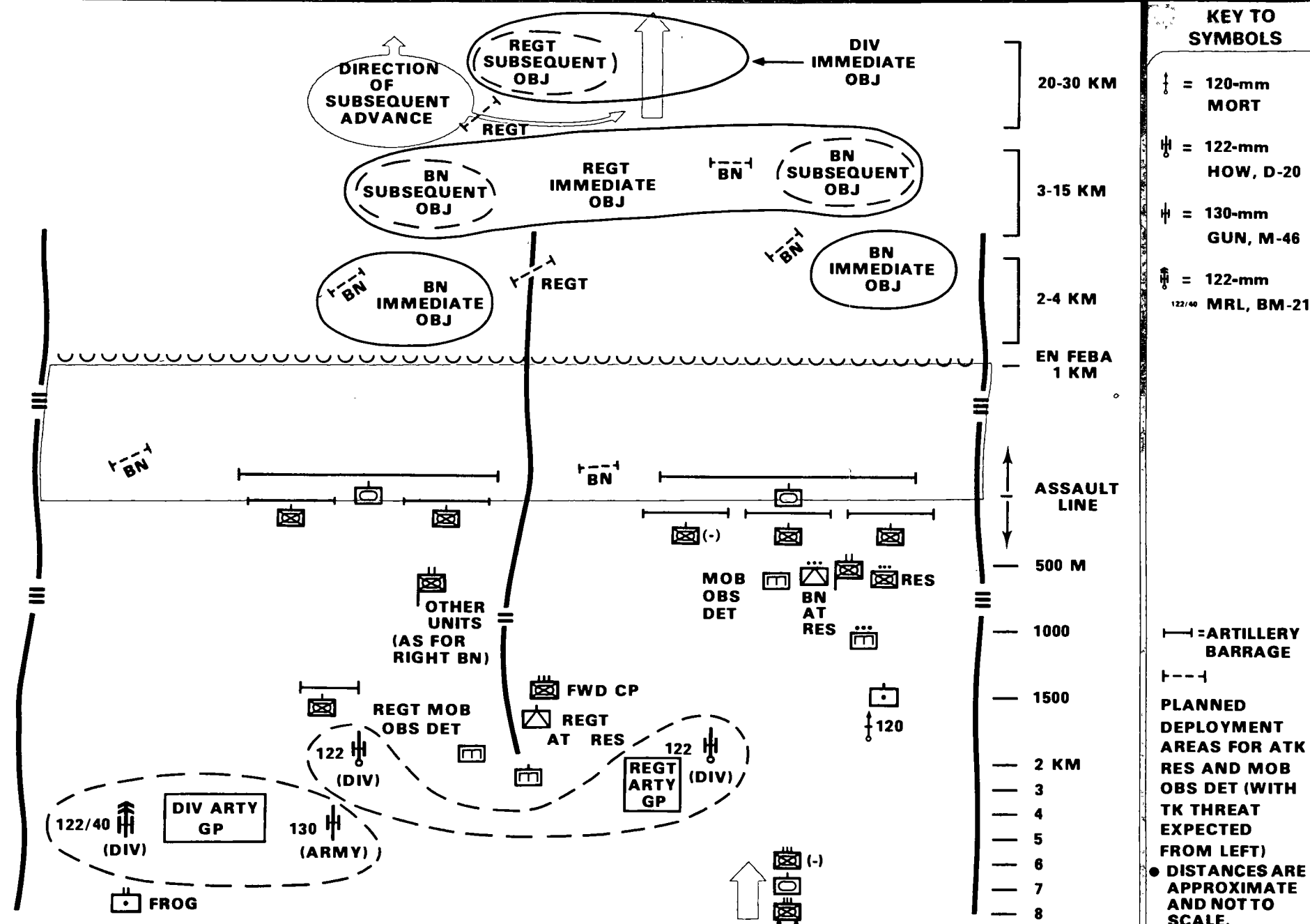


FIGURE 2-11. MOTORIZED REGIMENT IN THE ATTACK.



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FIGURE 2-12. MOTORIZED REGIMENT IN THE ATTACK.



The commander uses two basic types of offensive maneuvers with supporting attacks—the envelopment and the penetration. Normally, he will seek to bypass strongpoints and envelop defensive positions with single or double envelopments and move quickly into the enemy's rear area. If he cannot envelop the defensive positions, he will plan a penetration using strong single thrusts by a breakthrough force.

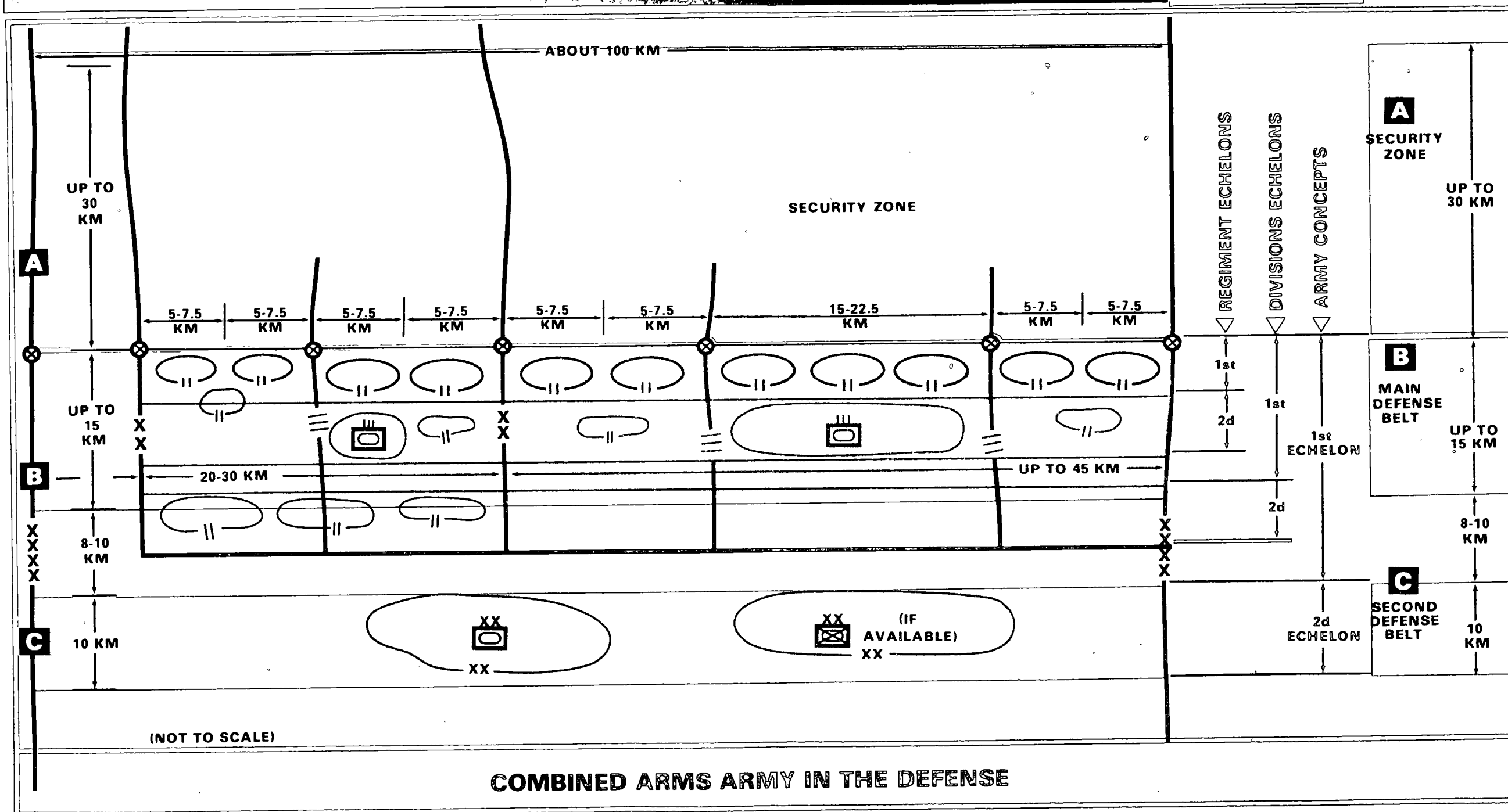
The breakthrough is used to rupture forward defenses of the enemy. It is a meticulously planned, deliberate offensive action against forces where no gaps or flanks can be found. Attacks carry the battle to the enemy rear area. Penetrations may be in conjunction with, or exploited by, attacks on the flank or rear areas. The capture of strongpoints and key terrain is left to following echelons. Speed and shock are paramount; heavy losses and isolated units are expected and planned for. Flank security is provided by an aggressive advance. Once an offensive is underway, more emphasis is placed on moving than on establishing a base of fire.

Once the defensive line is breached, the commander begins the pursuit. He moves parallel to the enemy, cuts his forces into segments, and defeats him in detail.

The Defense. The defense is temporary, used to gain time before resuming the attack or to economize forces in one area and attack in another. An area defense oriented on antitank weapons is the basic tactic. The defense is organized in depth with belts or echelons (fig 2-13). Emphasis is placed on

FIGURE 2-13 DEFENSE WITH BELTS AND ECHELONS.

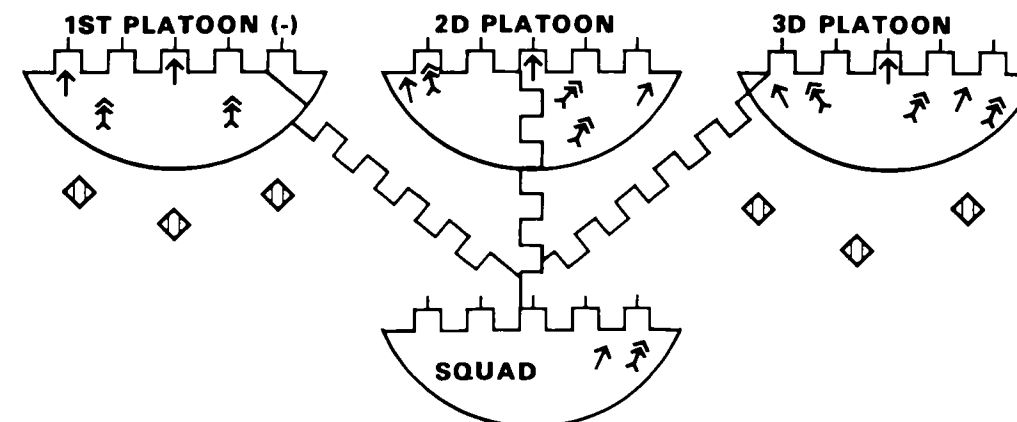
FIGURE 2-13. DEFENSE WITH BELTS AND ECHELONS.



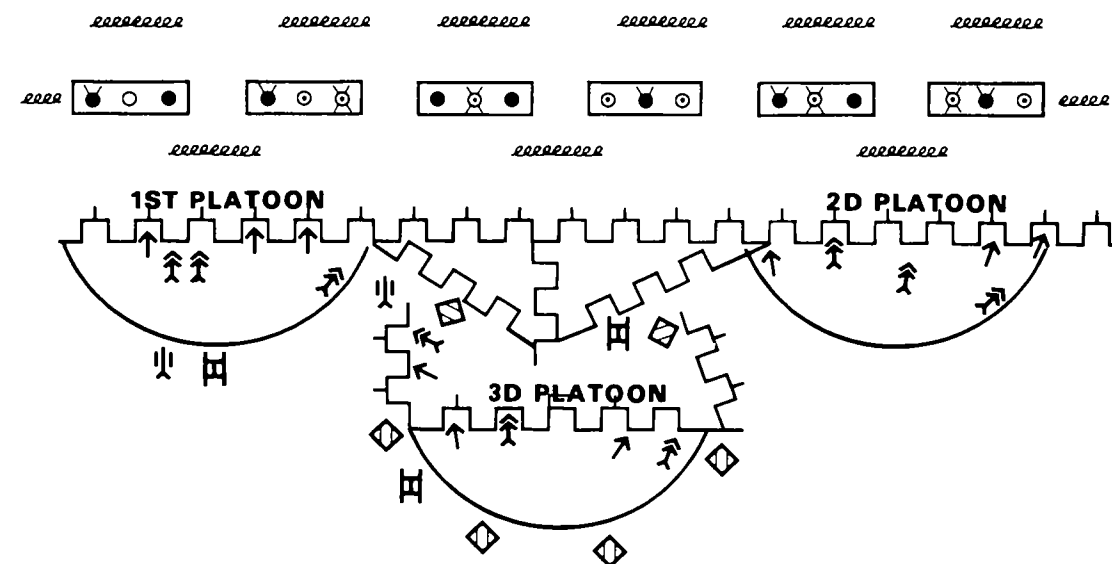
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FIGURE 2-13.

both natural and manmade obstacles, elaborate trench systems, extensive minefields, heavily fortified positions that the enemy calls strongpoints (fig 2-14), and mobile antitank task groups. Enemy penetrations are met with local counterattacks. If these are unsuccessful, the defenders delay and canalize the enemy into preselected killing zones and counterattack with fires and strong tank elements. Commanders believe that if the attacker's tank elements are stopped, the attack has been defeated.

FIGURE 2-14. RIFLE COMPANY STRONGPOINTS.



HASTY DEFENSE



DELIBERATE DEFENSE

↑ 7.62-mm LMG	⤴ RPG-7	⤵ 73-mm SPG-9	⤶ T-62	⬠ BTR-50 PK	
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In both the offense and defense, VHF/FM barrage jamming is used. In the offense, it begins simultaneously with preparation fires. In the defense, it is integrated with final protective fires.

☐ Special Operations

Night Operations. Doctrine calls for night operations to maintain the momentum of the attack and to permit surprise attacks on objectives when terrain and enemy defenses would preclude surprise during daylight. Units are trained in night operations to insure that all soldiers can follow the measures used to control the night attack and can employ the variety of available night vision equipment.

The commander's planning starts with a detailed reconnaissance of the objective. With the information from his reconnaissance, he formulates a plan of attack that stresses speed of execution, simplicity, and maximum use of surprise. To control the operation, the commander selects two phase lines. The first is in the enemy's forward defense area. The second is selected so its capture will force the enemy to displace his division artillery. Fire support assets are decentralized with the RAG artillery battalions attached to the lead maneuver battalions. Artillery and aircraft illumination is planned to create reference points for advancing units, mark targets for artillery fires, interfere with enemy night vision equipment, and illuminate objectives.

The execution of the commander's plan begins around twilight when the attacking forces move to deployment areas. Shortly before dawn, the attack begins. The motorized rifle battalions attack in a single echelon with companies and platoons on line. Tanks and infantry are employed together in close coordination. If the attack is successful, the enemy commander will be able to conduct his exploitation in daylight.

Operations in Urban Areas. When attacking an urban area, the commander tries to take the city before the enemy can build his defense. He divides the city and destroys the defender by segments. If surprise is lost, the enemy commander prepares a deliberate attack.

For the deliberate attack, the commander attaches medium and heavy howitzers and guns to the assault units. He plans simultaneous frontal and flanking attacks and uses sewers, subways, and utility tunnels to infiltrate reconnaissance, demolition, and assault parties. He precedes the attack by intensive reconnaissance for up to 6 days.

The attack begins by driving into enemy OPs and forward positions. Tanks cover exits from the urban area by fire, and tank reserves engage counterattacking enemy forces. The city is divided into battalion areas. After an extensive air and artillery preparation, the battalions initiate a series of independent actions to clear every building in their area. Howitzers are attached to assault teams for direct fire on enemy positions and to breach buildings. Large caliber artillery is used for direct fire to destroy buildings. Mortars are used to provide close support for attacking elements. Outside the city, DAG battalions provide counterbattery and interdiction fires and mass against strongpoints in the city.

Doctrine for defending urban areas is not defined as clearly as for the attack, but certain principles do guide the defense.

- ☐ Conduct urban area defense outside the city or on an approach to the city.
- ☐ Prevent envelopment of the city.
- ☐ Maintain a large tank force outside the city to counterattack.
- ☐ Attach small artillery units or individual tanks to the force outside the city to reinforce strongpoints.

The defense is planned in depth, and buildings are used for mutually supporting strongpoints. Cellars are connected, walls common to two buildings are breached, and underground passages give the defender covered and concealed routes between strongpoints. Streets are mined and blockaded.

Desert Operations. Enemy doctrine for desert operations is an extension of armored warfare doctrine; it maximizes armored force effectiveness in very large, open desert areas.

In the defense, battalion fronts are similar to those discussed earlier. Gaps are accepted between regiments and divisions. The priority is to defend major axes and objectives in depth. Gaps in minor sectors and areas with limited trafficability are lightly defended. Strong reserves, mainly tanks, are held at greater depth than normal and are used to stop enemy enveloping and encircling movements and to counterattack penetrations.

In the attack, forces assault from the line of march, deploying at high speed into platoon columns 3 to 5 km from the objective. Tanks normally are employed in the first echelon. Flanking detachments penetrate gaps in enemy defense and frontal attacks are rarely used. Great emphasis is placed on direct fire from artillery.

☐ **Fire Support Countermeasures**

Below are significant enemy characteristics, capabilities, and vulnerabilities that have fire support implications. In the left column are the actions or strengths; in the right column are countermeasures.

HEAVY STRENGTHS OR VULNERABILITIES

COUNTERMEASURES

Strengths

1. Large mechanized and armored formations fight as a combined arms team.

2. Heavy air attacks are used, principally, against deep targets, nuclear delivery systems, artillery units, and other *critical* targets.

3. Massive field artillery can be brought to bear.

4. Counterbattery and close support missions are fired simultaneously.

5. All sources of intelligence collection and target acquisition means are used (HUMINT, PHOTINT, SIGINT/EW).

a. HUMINT _____

(1) Commander's reconnaissance and ground reconnaissance units.

(2) Intelligence agents, local civilian population, and combat patrols.

b. PHOTINT _____

1. Slow, disorganize, and fix. Cause tanks to button up and strip infantry away with indirect fire. Engage at long range with integrated direct and indirect fires.

2. Use terrain positioning, camouflage, air guards, convoy discipline, and air defense weapons. Use decoy weapons and dummy and alternate positions.

3. Aggressively use target acquisition assets to locate enemy batteries. Develop a well-planned, responsive counterbattery program. Task electronic warfare systems to locate enemy artillery transmitters for destruction or jamming.

4. Harden FA positions and be able to reposition rapidly.

5. Employ OPSEC techniques: deception/ countersurveillance, signal security, physical security, and information security.

5a(1) Use terrain positioning, camouflage, and concealment. Infiltrate or move by echelon in periods of reduced visibility. Use smoke, prepare false positions, and use decoys. Enforce light and noise discipline.

5a(2) Limit operational information on a "need to know" basis. Limit shotgun message traffic. Brief troops at last possible moment. Do not post operational information on windshields or other nonsecure areas. Remove signs of vehicular movement. Prepare obstacles and minefields. Use LP, OP, and patrols. Use guards and security forces. Use challenge and password.

5b. Use air defense weapons, terrain positioning, camouflage and concealment, light and litter discipline, traffic discipline, alternate positions, dummy positions, and decoys.

HEAVY STRENGTHS OR VULNERABILITIES

COUNTERMEASURES

0

c. SIGINT/EW

- | | |
|--|---|
| <p>(1) Radio direction finding and intercept.</p> <p>(2) Radio jamming.</p> <p>(3) Radars, sensors, and radar direction finders.</p> <p>6. Forces are echeloned in depth.</p> <p>7. There are tank-heavy reserves.</p> <p>8. Mass is achieved by rapid concentration of men, materiel, and firepower.</p> <p>9. Deception is used habitually.</p> <p>10. Speed and shock are emphasized rather than fire and maneuver. (Breakthrough tactics.)</p> | <p>5c(1) Use couriers, wire, directional antennas, minimum radio traffic, low power on radios, and terrain-masked antennas. Use secure radios and authorized codes and call signs. Impose radio silence. Defer exposure of fire direction nets by initially operating in the command/fire direction (CF) net 1 and the CF net 2.</p> <p>5c(2) Mask receiving equipment from jamming signal or work through jamming with high-power transmissions. Report MIJI. Destroy enemy jamming equipment.</p> <p>5c(3) Use noncontinuous radar operation. Point radars away from enemy when calibrating. Fire simultaneously from multiple positions and use simulators to saturate and confuse the enemy system. Use offset registrations and terrain masking. Smoke OPs. Use radar direction-finding equipment to locate countermortar/counterbattery radars. Jam when destruction is impractical. Fire on known locations.</p> <p>6. Identify and attack second echelon forces at maximum ranges. Insure rapid and continuous coordination between maneuver and fire support leaders to establish target priorities.</p> <p>7. Location of the reserve forces is a high-priority mission for intelligence agencies and target acquisition systems. Once located, attack with antitank munitions.</p> <p>8. The massing of forces, whether by the second echelon or the reserve, presents a lucrative nuclear or conventional target. Rapid response is necessary because forces will be massed for as short a time as possible. Use massed fires.</p> <p>9. Insure close cooperation and sharing of intelligence between fire support leaders and the force intelligence staff for development of a complete target information/intelligence picture.</p> <p>10. Develop SOP that preclude lengthy coordination. Employ all combat support agencies to slow, disrupt, and canalize the advance. Engage at maximum indirect fire range, and use massed fires, shifted rapidly. Jam communications; attack command posts</p> |
|--|---|

HEAVY STRENGTHS OR VULNERABILITIES

COUNTERMEASURES

11. The defense is antitank and strongpoint oriented with tank-heavy mobile reserves.

12. Extensive night operations are used.

13. Attempts are made to take a city before defenses can be completed.

14. Attempts are made to infiltrate and divide urban areas and destroy the defender piecemeal.

15. Desert operations are an extension of basic armored doctrine; wider frontages are planned.

and artillery positioned in depth. Reposition to keep maximum pressure on the enemy. Keep our communications operating. Establish priority of targets in the breakthrough area along with counterfire requirements.

11. Isolate antitank strongpoints with smoke and suppressive fires, then attack with maneuver forces. Target mobile reserve and indirect fire weapons early. Decide when to initiate counterfire—this is critical.

12. Cue all sources of intelligence against likely assembly areas and target to disrupt attack preparations. Smoke and jamming complement each other to disrupt command control. Fire support units are prepared to reposition.

13. Engage as far from urban area as possible with indirect fire means. This will give maneuver forces time to prepare defenses.

14. Use city maps and utility plans to locate and target infiltration routes. Isolate portions of the enemy force by causing rubble to canalize and to create kill zones. Use smoke and nonpersistent chemicals with antipersonnel munitions to separate tanks and infantry. Position the majority of artillery outside the city.

15. Accurate long-range intelligence is key to success. CAS and FA are used at maximum range to attack enemy force in columns. Use FA to suppress air defense weapons; use CAS to kill tanks. Use fire to cover gaps in the wide frontage defense.

Vulnerabilities

1. There are lean support bases and reliance on pre-positioned supplies.

2. Communications are excellent; however, at company level, primary command control is with visual signals.

3. Artillery command observation post (COP) is "heart" of the fire support system.

4. Illumination and pyrotechnics are used to mark objectives at night.

1. Target rear area supply depots and pre-positioned stocks.

2. Jam command nets and locate transmitters. Fire on located command control facilities. Use smoke to degrade visual command control. Command and artillery OPs are high-priority targets.

3. Attack as part of the counterfire program. Use antipersonnel munitions, smoke, and jamming.

4. Illuminate the battlefield over the enemy. Fire colored pyrotechnics to confuse enemy maneuver elements.

2-5. The Infantry (Light) Enemy Force

The predominantly infantry force is the backbone of enemy forces in Asia.

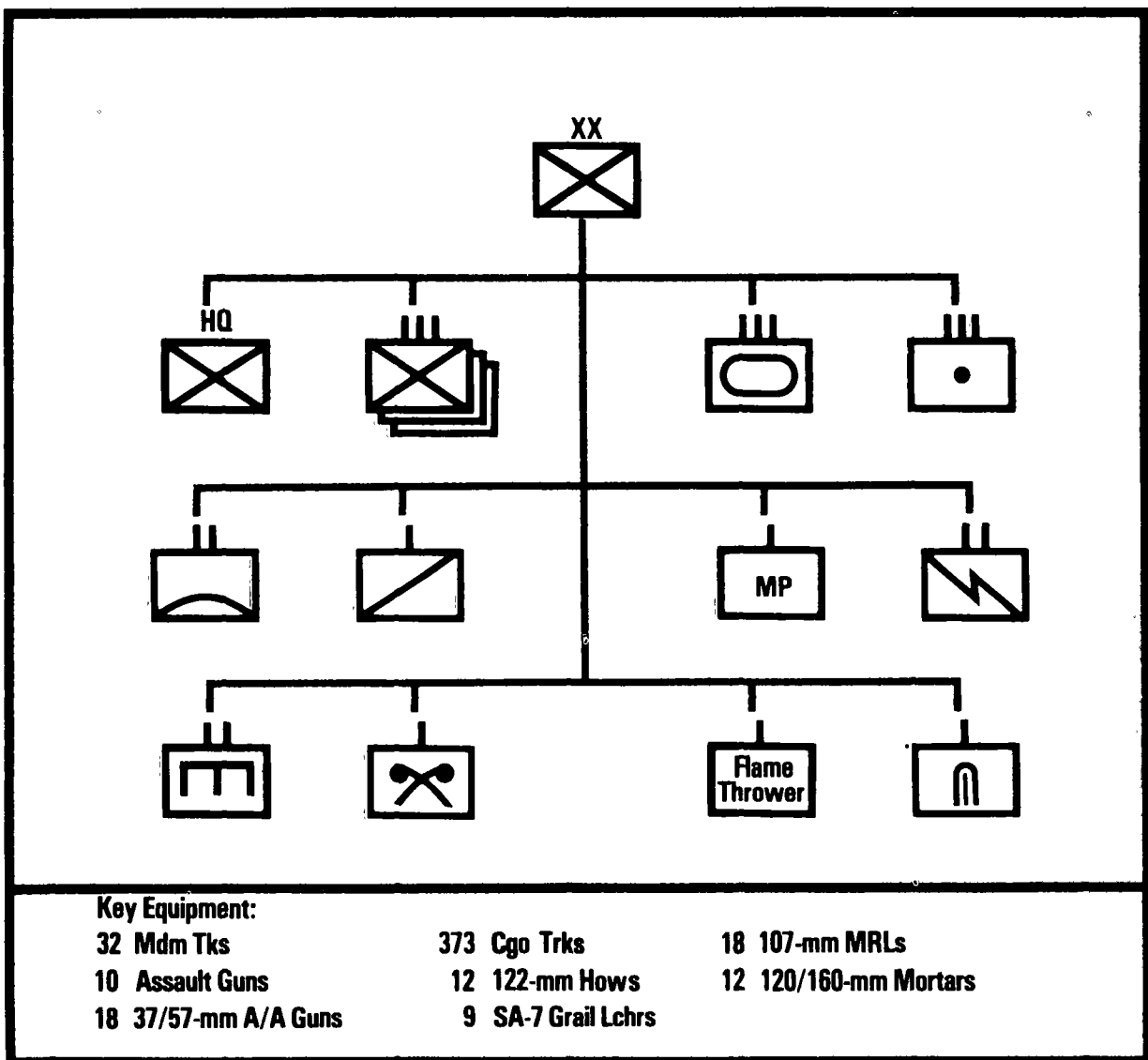
□ Organizations

The light force has armored, mechanized artillery, antitank, antiaircraft, and engineer

units, but the majority of its forces are infantry. In the field army, there are normally three infantry divisions, an artillery regiment, and other supporting units. Field armies are controlled by military region commanders in peacetime and by theater commanders in wartime.

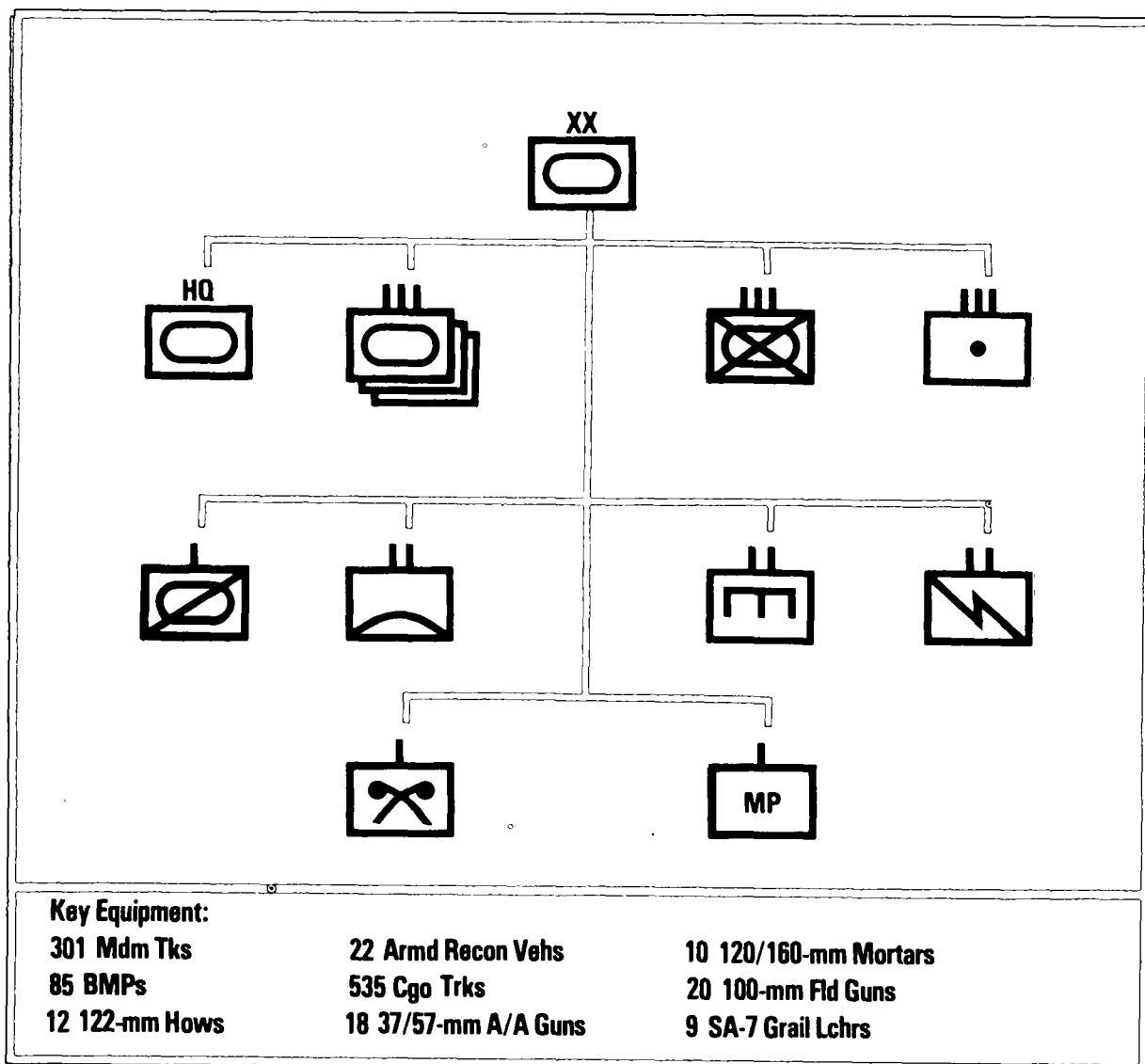
Divisions. Divisions have fixed organizations. The infantry division is

FIGURE 2-15. INFANTRY DIVISION.



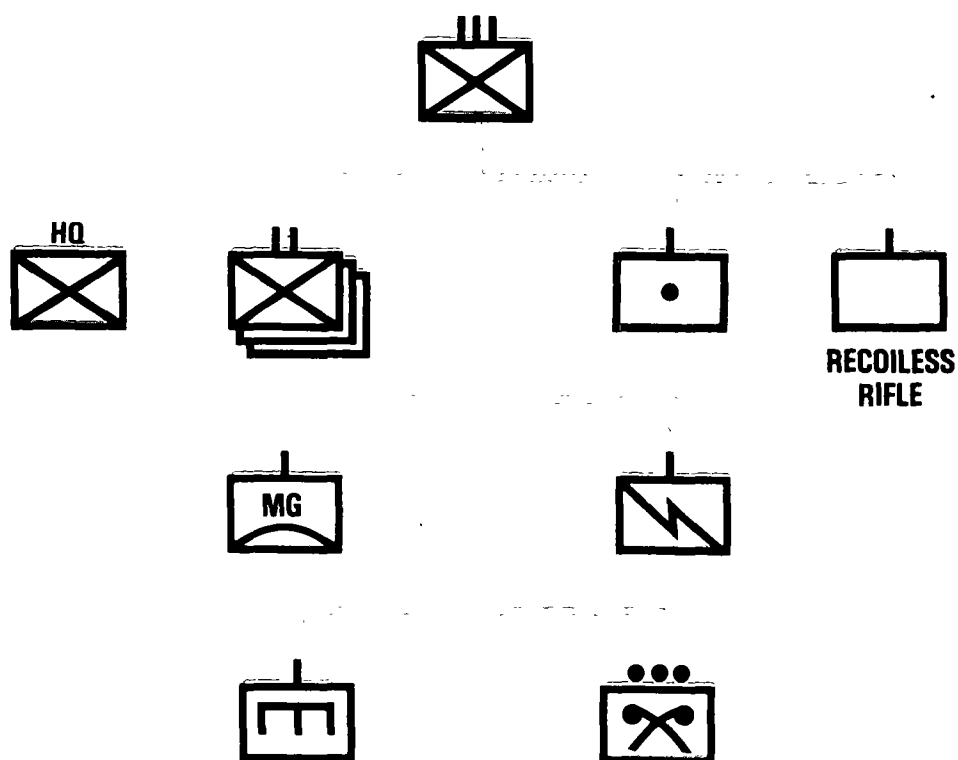
shown in figure 2-15. The armored division is shown in figure 2-16. There are very few armored divisions in the light forces. Shortages of equipment, spare parts, and the lack of a logistics system to support these divisions limit their effectiveness.

FIGURE 2-16. ARMORED DIVISION.



Regiment. The infantry regiment (fig 2-17) is the backbone of the division. It has a fixed organization and is the lowest level with organic transportation. Cargo trucks are controlled by the regimental rear services officer. Artillery and armor reinforcement normally is provided from divisional or army assets.

FIGURE 2-17. INFANTRY REGIMENT.



Key Equipment:

30 Cgo Trks

9 57-mm RRs

9 75/82-mm PRs

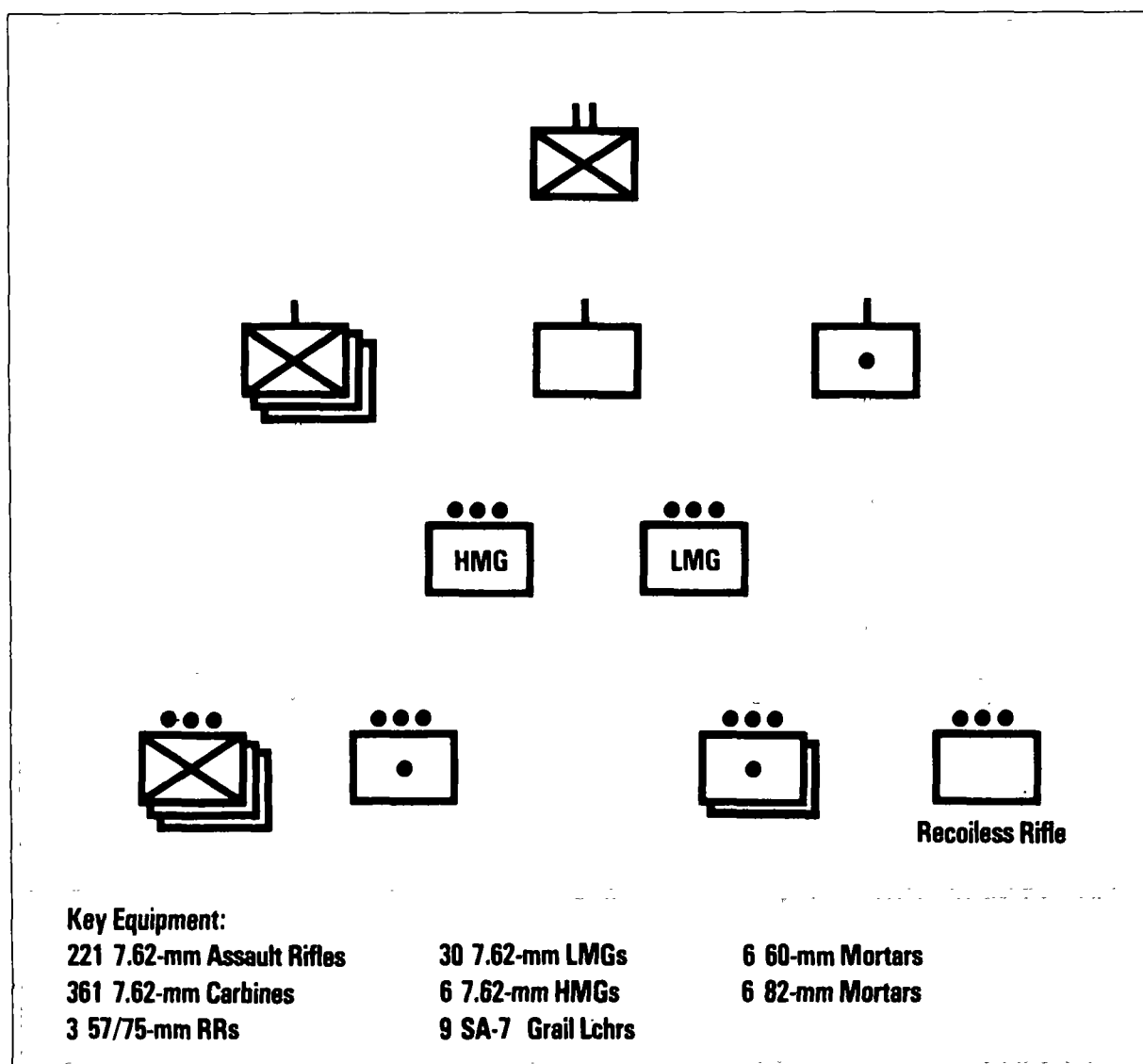
27 82-mm Mortars

18 60-mm Mortars

9 SA-7 Grail Lchrs

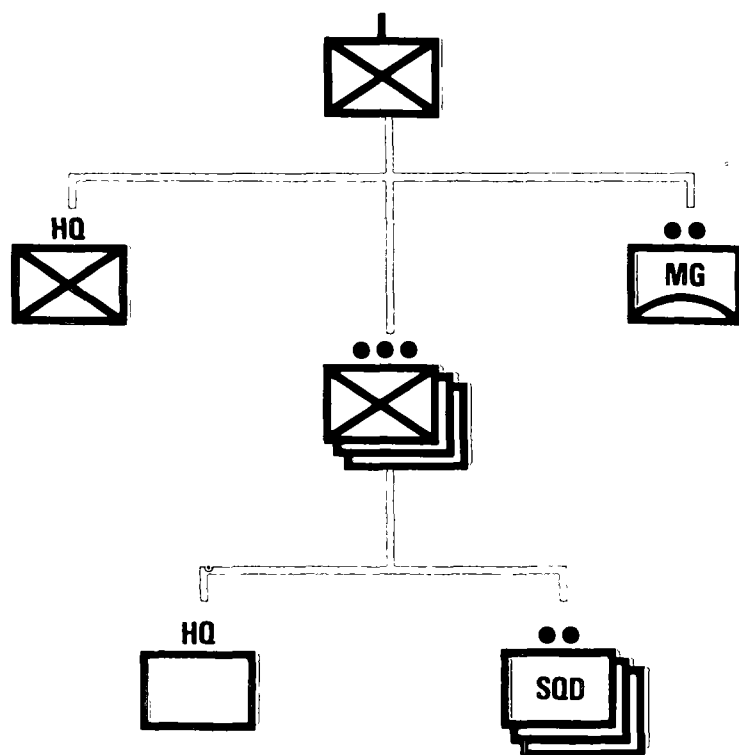
Battalion. The infantry battalion is at figure 2-18. In some battalions, there is a combined machinegun-mortar company. The battalion has no organic transportation.

FIGURE 2-18. INFANTRY BATTALION.



Company. The infantry (light) enemy rifle company (fig 2-19) is the smallest unit capable of independent action. Additional fire support is provided to the company by the battalion mortar and machinegun companies.

FIGURE 2-19. LIGHT INFANTRY COMPANY



Key Equipment:

6 Pistols

6 M1891/30 Rifles

78 AK-58/68 7.62-mm Assault Rifles

2 RP-46 7.62-mm LMGs

9 RP-2/7 Antitank Grenade Lchrs

9 RPK/RPD M-60 7.62-mm LMGs

□ Doctrine

Doctrine is influenced by ancient and modern military theoreticians and military experiences over the past 50 years. *The primary aim is to defeat a technologically superior force using infantry organizations.* Superiority in long-range weapons and massed firepower is conceded—but soldiers are trained to be "superior" in close engagements. The doctrine is to "embrace the opponent," to fight as closely as possible to him. There is emphasis on infiltration and night operations derived from guerrilla warfare experience.

Infiltration. Commanders stress infiltration of assault forces to the enemy's flanks and rear before an assault. This is to destroy enemy morale and establish blocking positions in rear areas. Forces are infiltrated to frontal assault positions close to the enemy to achieve surprise when the assault is initiated.

Night Operations. Night operations and night training are emphasized. In particular, the techniques of stealth, flanking movements, encirclement, close combat, and employment of ruses are stressed.

Other Doctrinal Principles. The light force has a series of doctrinal principles that can be applied to all operations and a series that can be applied in guerrilla warfare. The general principles are:

- Careful preparation and planning.
- Detailed planning and rehearsal to overcome communications shortages. This leads to relatively inflexible execution of operations.
- Pre-positioning of supplies and equipment.

The guerrilla warfare principles are:

- Seek a quick decision.
- Politically mobilize and indoctrinate the people in operation areas.
- Be on the offensive tactically even when defending strategically.

- Generate local superiority in forces—4 or more to 1—even when outnumbered overall. One overriding principle of guerrilla warfare permeates light force doctrine: Respect the enemy's capabilities and avoid direct encounters when his forces are superior.
- Establish a grass roots intelligence network.

As indicated in the *heavy force* discussion, the type of combat that is generally anticipated is a heavy concentration of armor/mechanized forces supported by massive artillery fires. However, the type of combat that is expected from the *light force* can take many forms. At night, individuals and small units are expected to operate in the purest sense of guerrilla warfare. The following morning, friendly forces might be attacked by multidivision forces supported by tanks and artillery. The significant point to understand is that the light force will use *any combination* of "tactical styles" or techniques to fight a battle.

The infantry (light) enemy force seeks to overcome better equipped enemy forces by stressing:

**grass roots intelligence;
political mobilization and indoctrination of indigenous personnel;
detailed planning, preparation, and rehearsal of operations;
pre-positioning of supplies and equipment;
night operations and training;
infiltration;
local superiority in forces; and
close engagement for quick tactical decisions.**

□ Tactical Techniques

The light force uses two tactical maneuvers common to all armies—the envelopment in various forms and the frontal attack. They avoid the frontal attack whenever possible.

Two variations of the envelopment are employed. The first is called the *one point, two sides* technique (fig 2-20). It calls for dividing forces into three or more groups and

concentrating overwhelmingly superior strength at one point. Simultaneously, supporting attacks are made on two (or more) sides. This insures that the enemy can be enveloped and annihilated.

The second variation is called *divide and destroy*. Enemy positions are penetrated and split into successively smaller groups. These positions are then assaulted by overwhelming strength (fig 2-21).

FIGURE 2-20. ONE POINT, TWO SIDES TECHNIQUE.

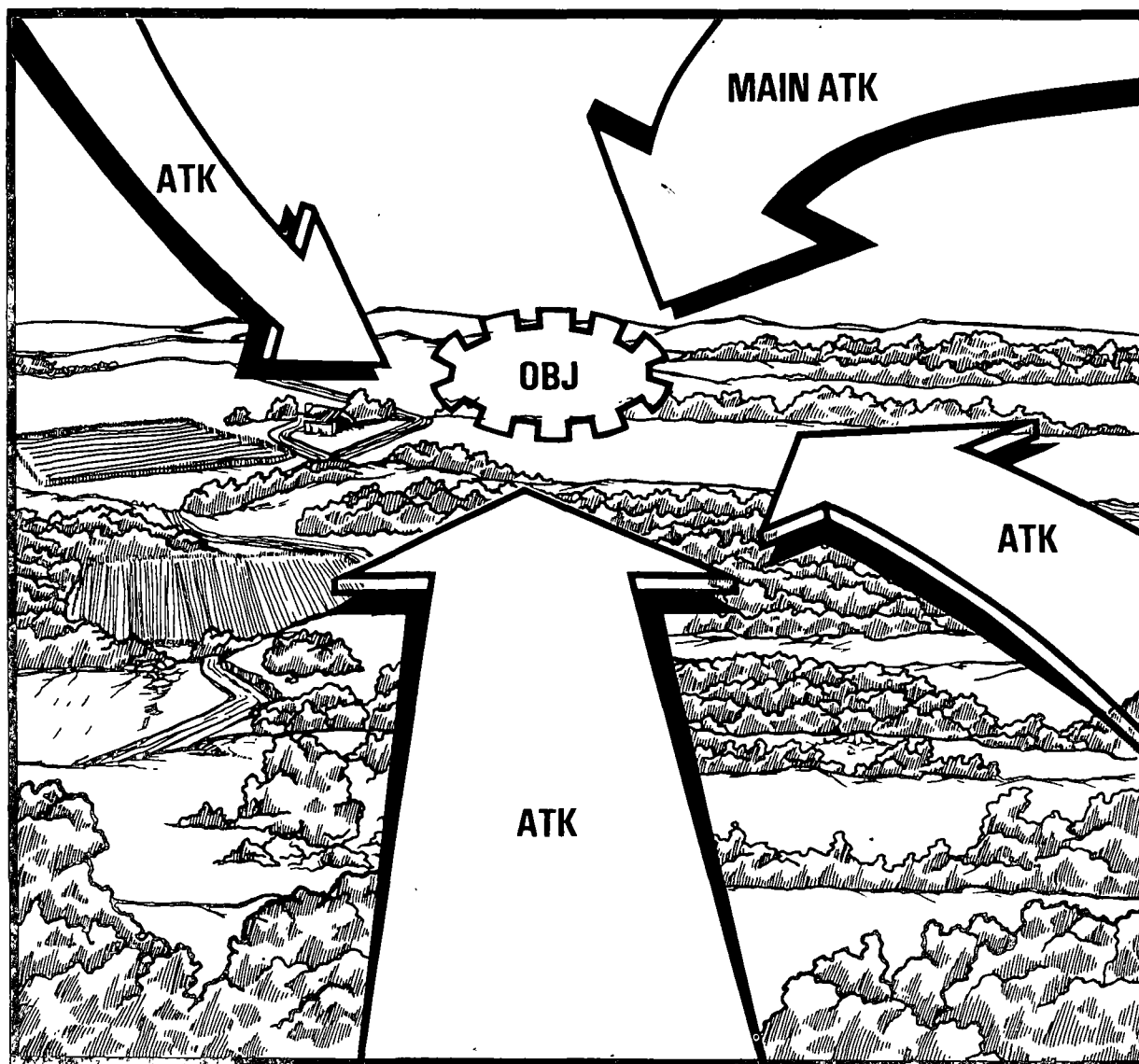
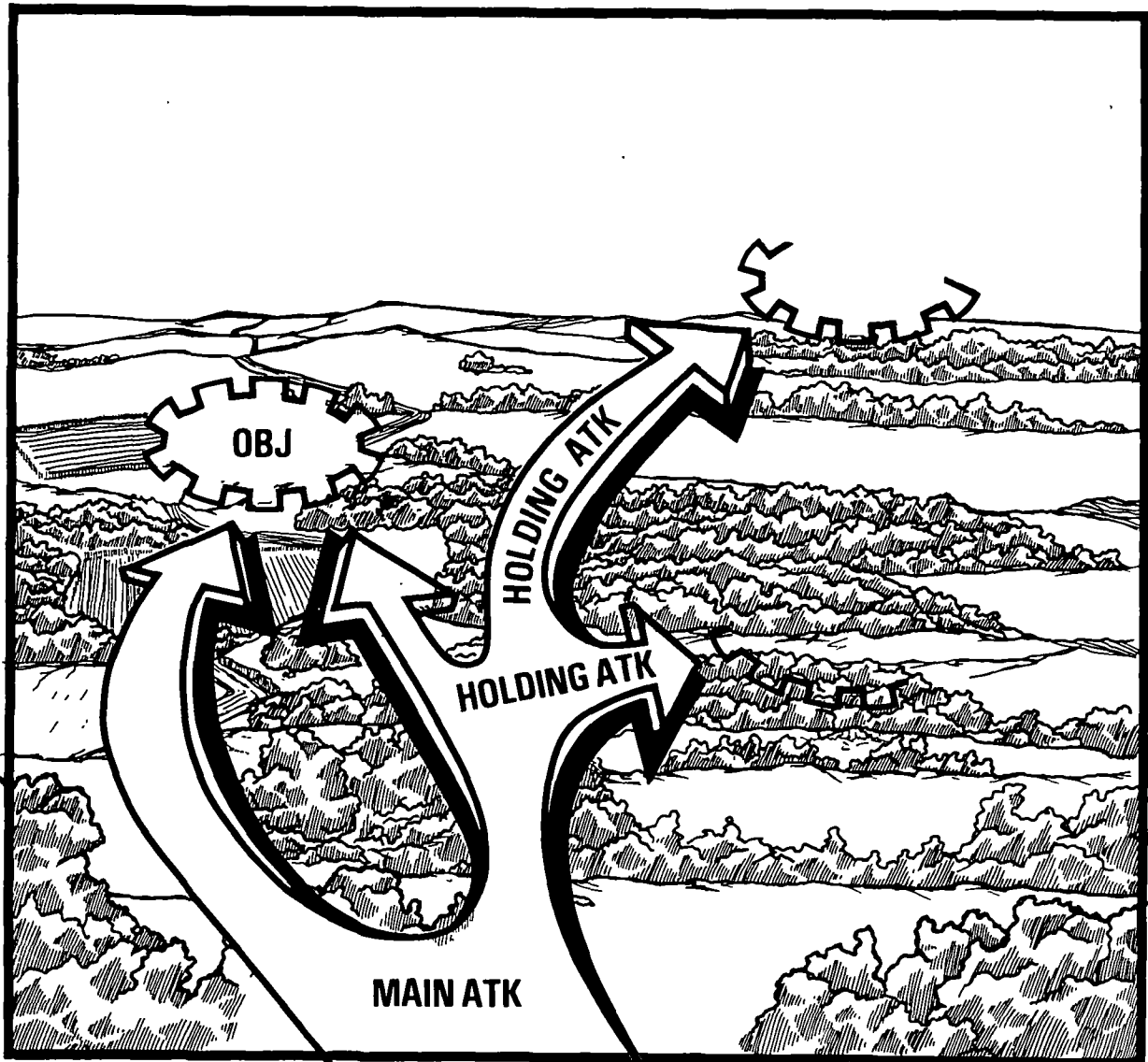


FIGURE 2-21. DIVIDE AND DESTROY TECHNIQUE.



□ Artillery Fire Support

Artillery is allocated similar to that of heavy enemy forces. Artillery division assets are allocated to first echelon armies, which allocate them and some of their organic artillery to first echelon divisions. Divisions allocate to first echelon regiments, and regiments place some artillery in direct support of first echelon battalions. Second echelon divisions, regiments, and battalions may not have artillery support until they are committed.

Artillery can be organized into temporary tactical groupings. Support groups control the artillery in direct support of infantry regiments. Long-range groups control heavier artillery weapons. Some of these heavy artillery groups are in direct support of divisions; others are under army control.

Artillery commanders are habitually located with the supporting maneuver commanders to provide responsive control. Forward observers are deployed with frontline battalions.

□ Offense

When attacking, normally two echelons are used. Depending on zone width, one or three echelons may be used. The first echelon attacks and seizes specific objectives. The second echelon supports the first and adds depth to the offense.

The second echelon is not considered a reserve. It is a committed force, although it has missions normally assigned to a reserve. If a reserve is used, its strength varies with the situation. It will be infantry heavy, motorized if possible, and well supported by fire. Battalions, companies, and platoons normally do not have reserves under their control. Regiment seldom has more than a company and division may have a regiment, but more likely a battalion. Regiments and divisions employ their reserves as prescribed by higher headquarters.

Frontages in the offense vary according to terrain, mission, enemy strength, and disposition. Strong enemy defenses and/or difficult terrain require deployment in depth and a corresponding reduction in the frontage of attacking forces.

A tank battalion (31 tanks) may be allocated to the attack echelons of the division. One regiment receives two tank companies; the other regiment receives one company. How the regiment further suballocates tanks depends on the mission, terrain, and enemy situation. A battalion might receive as many as two tank platoons (six tanks) for an assault.

□ Defense

There are two forms of defense: *positional defense* and *mobile defense*.

The *positional defense* is composed of mutually supporting strongpoints organized in depth. It is designed to *deny vital* areas to the enemy, halt his attack, and inflict significant losses on his men and materiel. *Forward units decisively engage* the enemy and *hold at all costs*. No thought is given to withdrawal to successive defense positions. At the opportune moment, forces mass for the counterattack (fig 2-22).

The positional defense at any level is divided into three parts:

- Security position,
- Main defensive position, and
- Positions in depth.

The security position is manned by the divisional reconnaissance company. It provides early warning and determines enemy strengths, composition, disposition, and axes of advance. Next, a regimental security force with reinforced companies from the two frontline regiments is encountered. Its mission is similar to that of the divisional reconnaissance company.

Each succeeding lower echelon deploys a security force, usually two echelons lower than the unit emplacing the force—platoon for battalion; squad for company.

The main defensive position normally has two regiments to maintain forward edge of the battle area (FEBA) integrity. There is a series of interconnected strongpoints organized for all-round defense and mutual support. Each forward regiment has two echelons in defensive positions.

The divisional second echelon, unlike heavy forces, is also the reserve. It provides depth to the main defensive positions, contains any large penetration, and counterattacks to restore the FEBA.

Artillery support of one or two batteries for each battalion is allocated to each forward regiment. The regiments normally hold the tanks in reserve to counterattack along with infantry troops.

INFANTRY (LIGHT) ENEMY FORCE DEFENSE

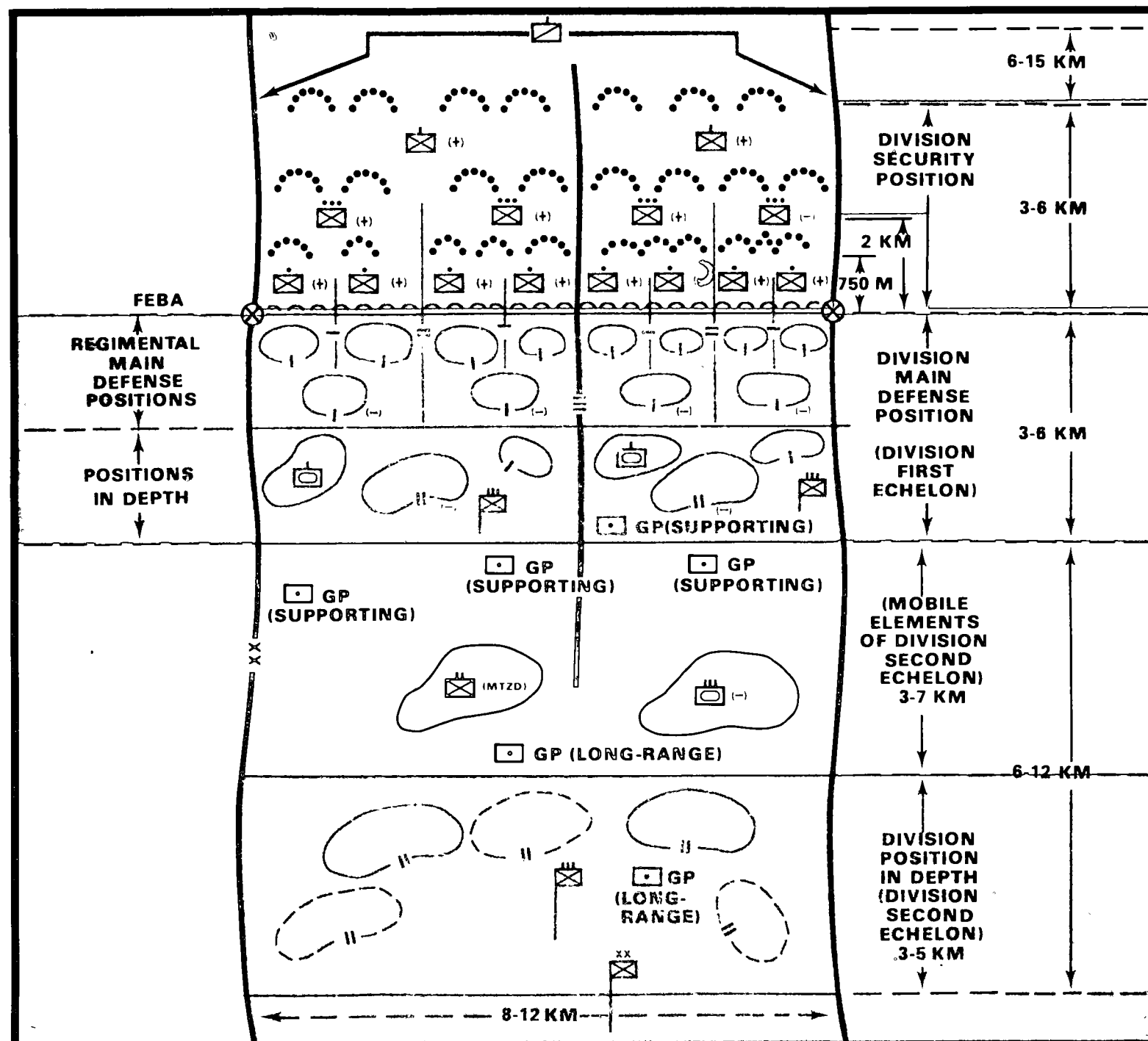
POSITIONAL DEFENSE:

- DENIES VITAL AREAS TO THE ENEMY.
- HALTS ENEMY ATTACK.
- INFLECTS SIGNIFICANT PERSONNEL AND MATERIEL LOSSES.

MOBILE DEFENSE:

- USED WHEN TERRAIN RETENTION IS NOT CRITICAL.
- UNITS ENGAGE THE ENEMY AND WITHDRAW TO SUCCESSIVE POSITIONS.
- WHEN ENEMY IS OVEREXTENDED, HE IS OVERWHELMED WITH A VICIOUS COUNTERATTACK.

FIGURE 2-2 2 POSITIONAL DEFENSE—THE DIVISION.

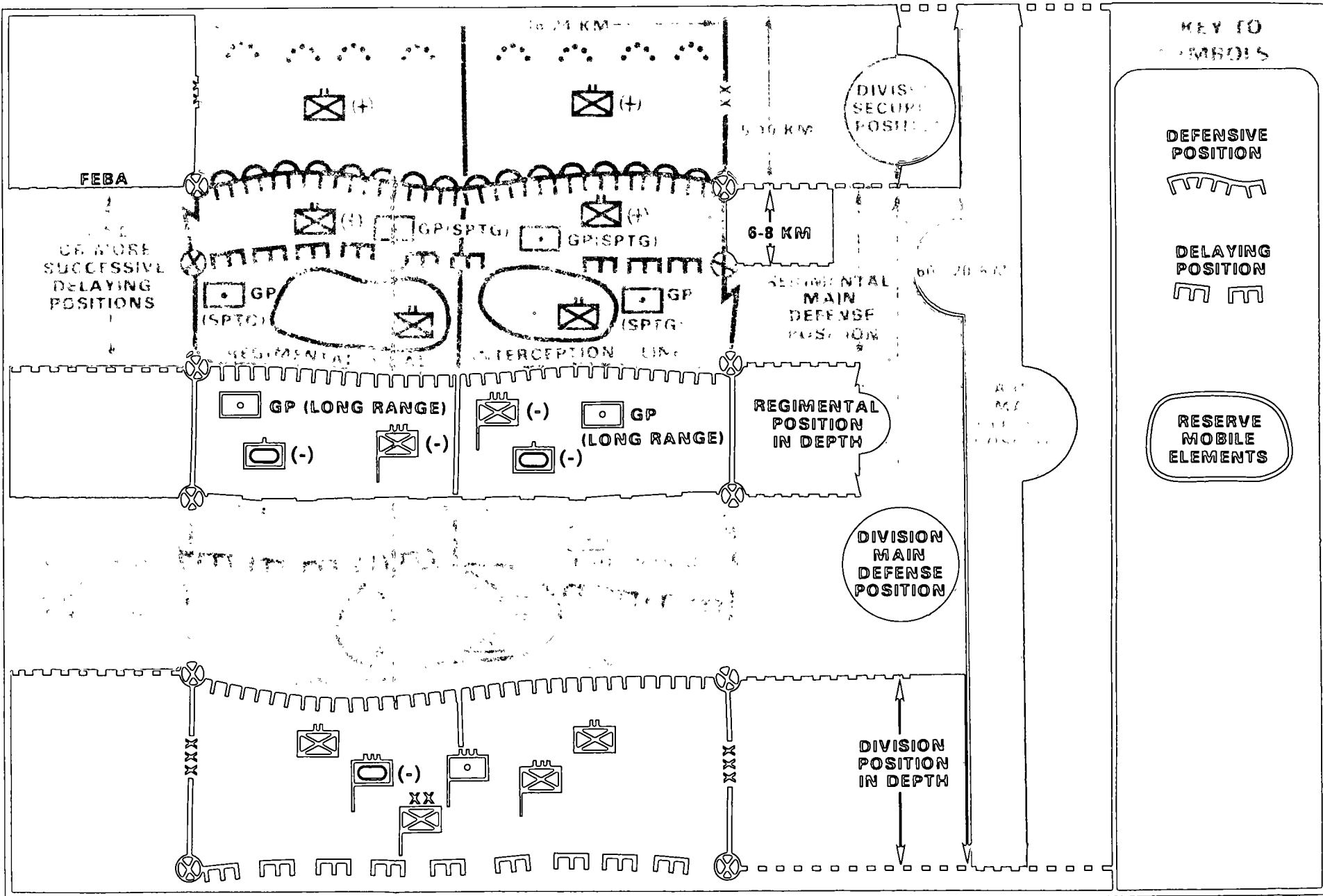


**FOLD OUT FOR PAGE 2-31 WITH
FIGURE 2-22.**

The *mobile defense* (fig 2-23) is used generally when terrain retention is not critical. The security force consists of two battalions from the second echelon of

frontline regiments. They are supported by armor and artillery and maintain contact with the enemy after withdrawal of army security forces. They delay back to the main defensive position.

FIGURE 2-23. MOBILE DEFENSE—THE DIVISION.



The divisional main defensive position normally consists of two regiments to stop the enemy forward of the regimental final intercept line. These regiments defend in two echelons with one battalion up and two back as a mobile reserve. Between the regimental rear boundary and the division final intercept line is the divisional second echelon. The divisional second echelon has the third regiment plus additional forces, probably attached from army. It covers the withdrawal of the first echelon regiments. This concept is extended rearward until the

enemy is overextended—then, the attacker is subjected to a vicious counterattack. To achieve this sort of mobile defense, divisions may be stacked behind divisions to provide more depth.

☐ Fire Support Countermeasures

Below are characteristics, capabilities, and vulnerabilities that have fire support implications. Actions or capabilities are on the left, and countermeasures are on the right.

LIGHT STRENGTHS OR VULNERABILITIES

Strengths

1. Well-developed night fighting and infiltration capability are used to gain surprise.
2. Commanders seek a quick battlefield decision.
3. Commanders seek local superiority of numbers using the "one point, two sides" and "divide and destroy" techniques.
4. A "grass roots" intelligence network is established.
5. Forces are echeloned in depth.
6. Field artillery is employed forward. Heavy mortars (106-mm—120-mm) are used extensively.
7. The positional defense is built around strong-points, and heavy counterattacks can be expected.

COUNTERMEASURES

1. Use side-looking airborne radar (SLAR), infrared (IR), moving-target-locating radar (MTLR), and night devices to detect and target enemy movements. Search in the most difficult access routes. Patrol.
2. Emphasize responsive massed fire support. Heavy volumes of fire can *fix* the enemy and deny him the tactical mobility he needs for quick resolution of the battle.
3. Do detailed fire support planning so fires are shifted about the battlefield faster than men. As the enemy masses, he is a lucrative, vulnerable target for antipersonnel munitions and tactical nuclear weapons.
4. Strict adherence to local security measures, camouflage, and light/noise discipline is required. Avoid establishing patterns of operation.
5. The second echelon is "committed" but it is *used* as a reserve. Target and fix it in position.
6. Cue counterbattery radars and sound and flash-ranging platoons on likely areas of employment. Mortars are particularly vulnerable to countermortar radars. Establish a "quick-fire" channel to firing units to increase responsiveness.
7. Isolate flanking strongpoints with suppressive fires and smoke. Attack with minimum force holding attack while overwhelming force is brought to bear in zone of attack. Plan high ammunition expenditures.

LIGHT STRENGTHS OR VULNERABILITIES

8. In the mobile defense, two-thirds of the force is a mobile reserve.

Vulnerabilities

1. The force is infantry heavy with some mechanized and armor units.
2. Small logistical bases and *all* logistic functions are controlled at division rear CP. Supplies are pre-positioned.
3. Limited motor transport available for troop movement and resupply.
4. Doctrine requires "embracing the enemy" to render fire support ineffective.
5. Lack of communications assets (few nets) leads to inflexible execution of operations.
6. Artillery commanders and FOs are employed well forward to adjust fire.

COUNTERMEASURES

Attack second echelon with indirect fire to fix it in position. Jam key nets. Retain some indirect fire to suppress antitank weapons. Target pre-positioned supplies.

8. Concentrate the targeting effort on mobile and antitank reserves at each echelon. Use smoke and jamming as in countering the positional defense. Use surprise massed fires.

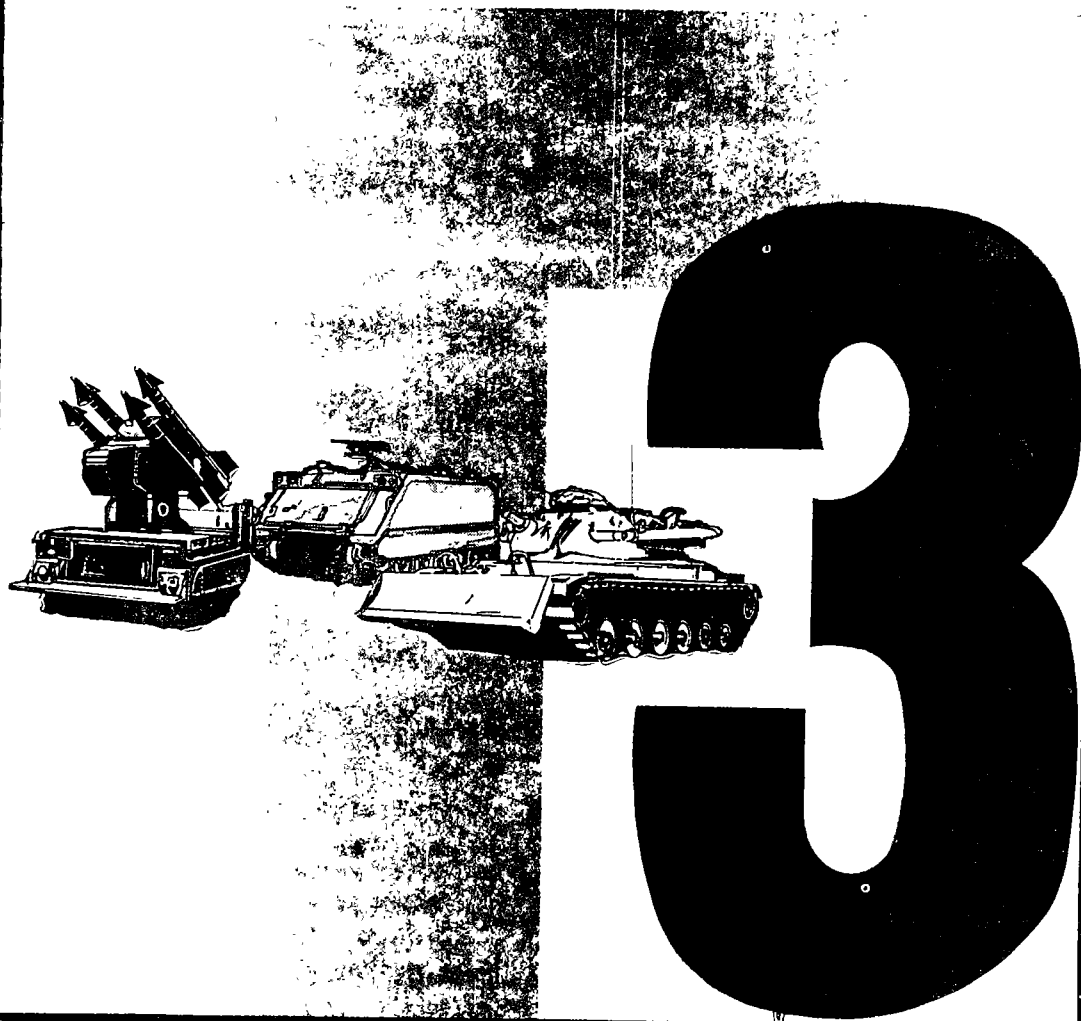
1. Use antipersonnel munitions and surprise massed fires extensively.
2. Cue target acquisition agencies on rear CPs, main supply points, and mobile supply points.
3. Make vehicle parks high-priority targets.
4. Use attack helicopters and CAS extensively. Fire artillery perpendicular to direction of attack to minimize range dispersion effects. Plan for heavy volumes of antipersonnel munitions close to friendly troops. Perfect quick reaction procedures to counter mass attacks initiated short distances from friendly lines.
5. Jam radio nets and use DF to locate command control/fire support transmitters. Target transmitters for attack.
6. Use antipersonnel munitions and smoke on command OPs.

2-6. Summary

Not all countermeasure combinations that can defeat an enemy capability or take advantage of a vulnerability were discussed. That would be a voluminous effort. The intent of this chapter is to cause thought and provide examples of how fire support can affect the battle. The cardinal notes are knowing the enemy and using his strengths,

weaknesses, and vulnerabilities to our advantage. Also prevent him from learning how, when, where, and why we *will* do, *are* doing, or *have* done something—OPSEC is imperative. The keynote is that the enemy is not invincible; he can be cut down to size and defeated by a smaller, better army—our army.

The next chapter discusses how the fire support system is organized and operates as part of the winning team.



Organization & Operation of the Fire Support System

WHY

- Integrating fire support and maneuver into a battle plan is vital to success. Combat leaders must understand the fire support system and how it contributes to success.

WHAT

- This chapter tells you:
 - the fire support *assets* available to the commander;
 - the *components* of the total fire support system;
 - the *personnel, agencies, and responsibilities*, for fire support planning and coordination;
 - the *composition, capabilities, and limitations* of all fire support means; and
 - *how* the fire support coordinators fit into battle planning.

3-1. The Fire Support System

□ Fire Support and the Commander

The maneuver commander integrates all fire support and maneuver assets to maximize combat power for the combined arms team. As he develops his plan for the employment of maneuver forces, he must visualize how fire support will be used, what targets to attack with what fire support means, and the priorities for engaging targets and allocating fire units. The commander or his operations officer insures that the fire support plan is developed accordingly, that all available fire support is considered, and that the maneuver plan is enhanced. Otherwise, the commander cannot realize the full potential of either his maneuver or fire support resources—he will be wasting combat power.

□ Combat Power and the Fire Support System

While combat power can be effectively multiplied by skillful use of intelligence, obstacles, combat service support, and electronic warfare, its two *primary* ingredients are *firepower* and *maneuver*. Thus, the expression: **MANEUVER + FIREPOWER = COMBAT POWER**.

Firepower and maneuver are separate, yet inseparable. Neither is paramount. Firepower includes *all* the weapons—direct and indirect—available to the commander. The three distinct but inseparable components of the fire support system function together to provide the commander the support he needs to accomplish his mission. The three essential components are:

- **Target acquisition**—The target-locating "eyes and ears" of the system.
- **Weapons and ammunition**—The target-attacking "muscle" of the system.
- **Command, control, and coordination**—The "brains" of the system that direct those tactical and technical actions needed to attack targets quickly and effectively.

There are many assets that can produce targets for the fire support system. Some of these belong to fire support units themselves—USAF forward air controllers; observers, radars, and sound and flash ranging sections of the field artillery; and naval gunfire spot teams. Other targets are gleaned from intelligence-gathering agencies belonging to maneuver units—air cavalry, remote sensors, and electronic and signal intelligence units.

There are also a large number of weapon systems available to attack these targets. Usually available are—

- mortars;
- field artillery cannons, rockets, and missiles;
- close air support; and
- naval gunfire weapons.

When the situation demands and the commander directs, other systems augment these fire support means. These include—

- organic and attached helicopters,
- selected air defense weapons, and
- tanks firing indirect fire.

With a large number of targets entering the system at different levels and through different channels, and with a great variety of weapons and ammunition available, the need for command, control, and coordination of fire support is obvious. If each part of the fire support system is to function in concert with the other components, someone at each echelon must be tasked with insuring that the fire support is *planned* and coordinated. The planning and coordination is a detailed and complex process, and it requires an expert. That expert is the FSCOORD.

MANEUVER+FIREPOWER=COMBAT POWER



3-2. The Fire Support Coordinator

☐ FSCoord Duties

As the fire support adviser for the force, the FSCoord actively injects fire support into the commander's estimates, decisions, and concepts. He does this through close interaction with the force commander and operations officer (S3/G3) throughout the planning and execution of an operation. He anticipates missions, situations, and changes so that he can advise the commander positively on *how* fire support can best influence the battle. The FSCoord

has to know what fire support assets are available and how to use them *collectively* to maximize the effectiveness of fire support.

To maintain close coordination and cooperation with the maneuver force, FSCoords organize and supervise a fire support coordination facility at every echelon from company to corps. This facility is collocated with the maneuver command post and puts technically qualified fire support personnel in continuous, personal contact with the maneuver operations personnel to insure responsive fires on a minute-to-minute basis.

☐ Fire Support Coordination Facilities and FSCoords

The FSCoord, using the personnel and equipment of these facilities, makes the fire support system function through fire support planning and coordination. Appendix G outlines the personnel, equipment, and major functions of each of the facilities listed.

MANEUVER ECHELON	Fire Support Facility	FSCoord	Assisted By
CO/TRP	Fire Support Team	FIST Chief	Senior Fire Support Staff
BN/SQDN	Fire Support Element	Fire Support Officer	Fire Support Staff
BDE	Fire Support Element	DS FA Battalion Commander	Battalion Fire Support Staff
REGT	Fire Support Element	Fire Support Officer	Assault Staff
DIV	Fire Support Element	Division Artillery Commander	Assault Staff
CORPS	Fire Support Element	Corps FA Officer	Assault Staff

3-3. Fire Support Planning and Coordination

□ Definitions

Fire Support Planning is the continuous and concurrent process of analyzing, allocating, and scheduling fire support and integrating it with maneuver to optimize combat power.

Fire Support Coordination is the continuing process of implementing fire support planning and managing the fire support assets that support the maneuver force.

Simply stated, fire support planning addresses HOW to use support. Fire support coordination entails all those actions needed to IMPLEMENT plans and MANAGE resources on the battlefield.

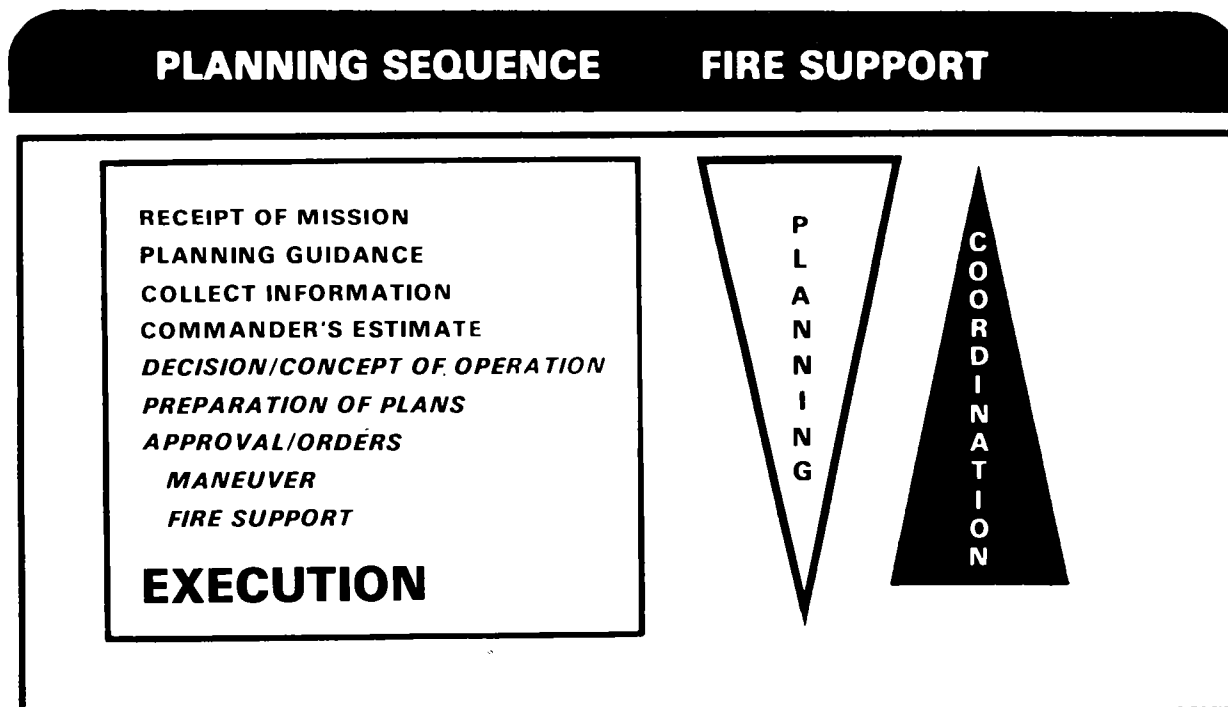
Although planning and coordination are separate, they are so clearly related that it is difficult to perceive a distinction. They occur simultaneously and overlap to the point they

are mutually supporting—if the HOW (planning) has been done well, the IMPLEMENTATION (coordination) will give the commander the support he needs to win.

□ Integrating Fire Support

If fire support is to add significantly to the commander's combat power, that commander must make fire support planning and coordination an integral part of the planning and decisionmaking process that determines HOW the battle will be fought.

The planning and coordination process begins when the mission is received or assumed. The commander and his FSCoord interact throughout the planning sequence, the decision process, and the execution of the mission. Planning dominates during the formative stages of an operation, while coordination becomes more and more important as the execution approaches.



□ Major Functions

As the FSCOORD participates with the commander in the planning and execution of the battle, he plans and coordinates as shown below.

The accomplishment of these functions is a complex process involving all three components of the fire support system, a

process that must be understood by the commander and the FSCOORD.

The remaining paragraphs of this chapter provide a detailed discussion of the fire support system with emphasis on the planning and coordination process and on the fire support means. Paragraph 3-12 illustrates HOW the FSCOORD fits into the planning process.

PLANS

- Anticipates requirements so he can advise the commander how to best use fire support.
- Assesses the fire support assets and the force mission so he can recommend priorities and allocations.
- Insures that all agencies that can provide target information are effectively used.
- Studies the enemy situation and the force mission to recommend what targets to attack and how.
- Visualizes the battle and provides the commander the flexibility to offset the unexpected and to expedite changes.
- Guides and coordinates the representatives of all fire support agencies as they contribute to the overall fire support plan.
- Determines which coordinating measures will best facilitate maneuver actions and recommends these measures to the commander.
- Builds in the necessary safeguards to protect friendly elements.
- Develops and coordinates an efficient, fully integrated fire support plan.

COORDINATES

- Anticipates the enemy's likely developing battle plan and coordinates the fire support plan.
- Determines the priority of fire support assets and the allocation of fire support assets.
- Tasks the fire support assets to attack the enemy's targets.
- Coordinates all the fire support assets and the commander's intent.
- Insures that the fire support assets are coordinated and that the fire support plan is executed.
- Insures continued flow of information.

□ Guidelines for Desired Effects on Targets

Once the maneuver commander has set his target attack priorities, he issues further guidance, with the advice of his FSCOORD, on which effects he desires to achieve on each type of target. This decision is based upon consideration of ammunition and delivery means available. The effects that the commander may require on a target are expressed as *suppression*, *neutralization*, or *destruction* and are discussed in the following matrix.

	SUPPRESS	NEUTRALIZE	DESTROY
Effect on the Target	Limits the ability of enemy <i>personnel</i> in the target area. HE-VT creates apprehension or surprise and causes tanks to button up. Smoke is used to blind or confuse. The effect usually lasts only so long as fires are continued.	Knocks the target out of the battle temporarily. Experience has shown that 10% or more casualties will neutralize a unit. The unit will become effective again when casualties are replaced and equipment is repaired.	Puts the target out of action permanently. 30% or more casualties normally renders a unit permanently ineffective, depending on the type and discipline of the enemy force. Direct hits are required on hard materiel targets.
Target Location	Normally planned against likely, suspect, or inaccurately located enemy firing positions.	Located by accurate map inspection, by indirect-fire adjustment, or by a target acquisition device.	Located by accurate map inspection, by indirect-fire adjustment, or by a target acquisition device.
Assets Required	Small firing units (howitzer platoons, mortar sections) frequently can do the job. Low ammunition expenditures.	Varies according to type and size of target and weapons/ammunition used.	Also varies; however, destruction usually requires large expenditures from many units. Destruction of armored or dug-in targets with area-fire weapons (FA, mortars, NGF) is not economical.
Example	If you know generally where the fire is coming from, you can suppress a platoon of enemy infantry with Sappers by sustained fire from two cannons firing HE and smoke.	If you have an accurate map location or adjust indirect fire onto the same platoon, you can, if the enemy is not well dug in — □ Neutralize the platoon with 2 battery volleys of 155-mm ICM. □ Destroy the platoon with 7 battery or 2 battalion volleys of 155-mm ICM. Amounts of ammunition required to neutralize or destroy a given type of target can be determined using Joint Munitions Effects Manuals (JMEM) or graphical munitions effects tables (GMET).	

□ Categories of Fire Support Planning

The depth and complexity of fire support planning depend on how much time is available and the echelon at which the planning occurs. Planning for contingencies and planning at higher echelons normally are very detailed and are outlined in explicit planning documents. During battle at the lower echelons, planning is more spontaneous, and many of the actions that occur in response to a battle situation are established in SOPs and fragmentary (frag) orders. As a result, two types of fire support planning occur: *formal and informal*.

Formal Planning. Formal planning goes from *higher to lower*; it results from a higher commander allocating resources to the lower commanders and providing guidance for their use. If time permits, a *written operation order (OPORD)* may be prepared at brigade and higher levels. Maneuver commanders and FSCOODs must know what fire support is available, its capabilities, how to obtain it, and how maneuver and fire support are to be integrated. The FSCOOD advises the commander on asset allocation for close support of maneuver, counterfire, air defense suppression, preparations, and other fire support programs. The FSCOOD also advises on—

- priority targeting requirements;
- the intelligence collection effort that supports targeting;
- the damage guidelines—when to suppress, neutralize, or destroy; and
- guidance for target acquisition agencies—where and when to look and what targets are important to the DS battalion or to the division artillery TOC.

At brigade and higher, formal planning normally results in a written *fire support plan* published in the OPORD, paragraph 3.

OPORD 2-76

1. Situation.....
2. Mission.....
3. Execution
 - a. Concept of Operation
 - (1) Maneuver
 - (2) Fires
 - b. 1 Bde
 - c.
 - d.
 - e.
 - f. Fire Support*

FIRE SUPPORT PLAN

 - (1) Chemical.....
 - (2) CAS.....
 - (3) FA.....
 - (4) NGF.....
 - (5) Nuclear.....
 - (6) Coordinating Instructions.....
 - g. Air Defense.....
4. Service Support.....
5. Command and Signal.....

**Fire support means are listed in alphabetical sequence, if practical.*

If necessary, the fire support plan is amplified by a fire support annex; however, this should be the exception rather than the rule.

Though formal and written, the plan is only a departure point and is kept simple and flexible. It includes the commander's guidance and specific instructions regarding integration of maneuver and fire support. It tells subordinate commanders how the commander will allocate fire support means to support maneuver elements, priorities, how to obtain support, limitations, and other items of interest to the commanders. It tells those involved with fire support their role in the battle plan, mission assignment, restrictions, and necessary coordinating instructions for counterfire, air defense suppression, and positioning. It establishes the direction of intelligence and target acquisition efforts and the desired damage guidelines (when to suppress, neutralize, or destroy).

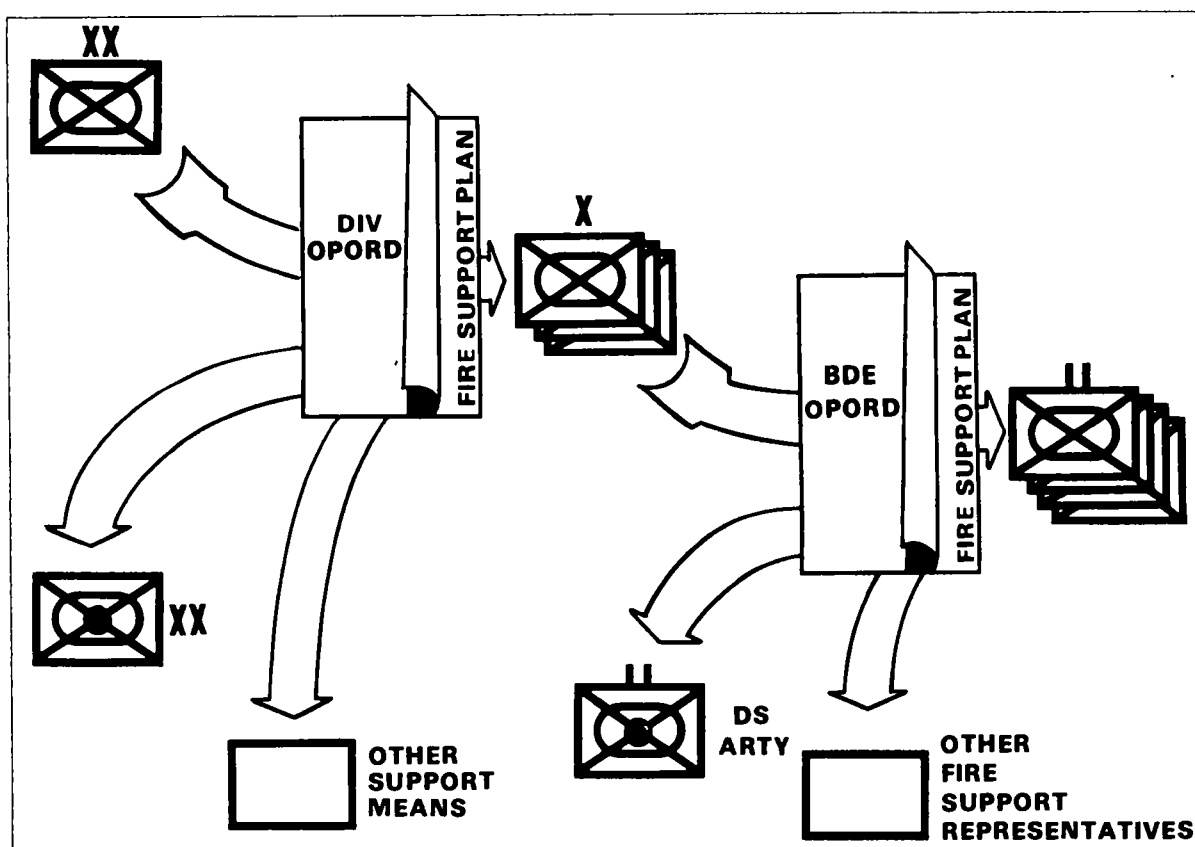
The fire support plan includes a subparagraph for each fire support agency involved in the operation. These are usually shown in alphabetical sequence. The appropriate representatives in the FSE prepare each subparagraph, and then the FSCORD compiles all fire support subparagraphs into the fire support plan.

The fire support plan for a given headquarters does not depend on target input from subordinate elements. Instead, it tells subordinate commanders what they are to do and what they need to know to accomplish their missions. If the division fire support plan includes a target list, it lists only those targets that the division commander decides

are critical to division operations. Likewise, a target list in a brigade fire support plan lists only those targets the brigade commander decides are critical to the brigade operation.

The fire support plan does not include "how to implement" instructions to individual fire support agencies (e.g., FA instructions to FA that green bag propellants will be fired at ranges less than 7,000 meters). Information peculiar to each fire support means should be addressed in SOPs or implementing instructions subsequent to receipt of the fire support plan. This formal fire support plan is disseminated from higher to lower headquarters as shown in figure 3-1.

FIGURE 3-1. FORMAL PLANNING CHANNELS.



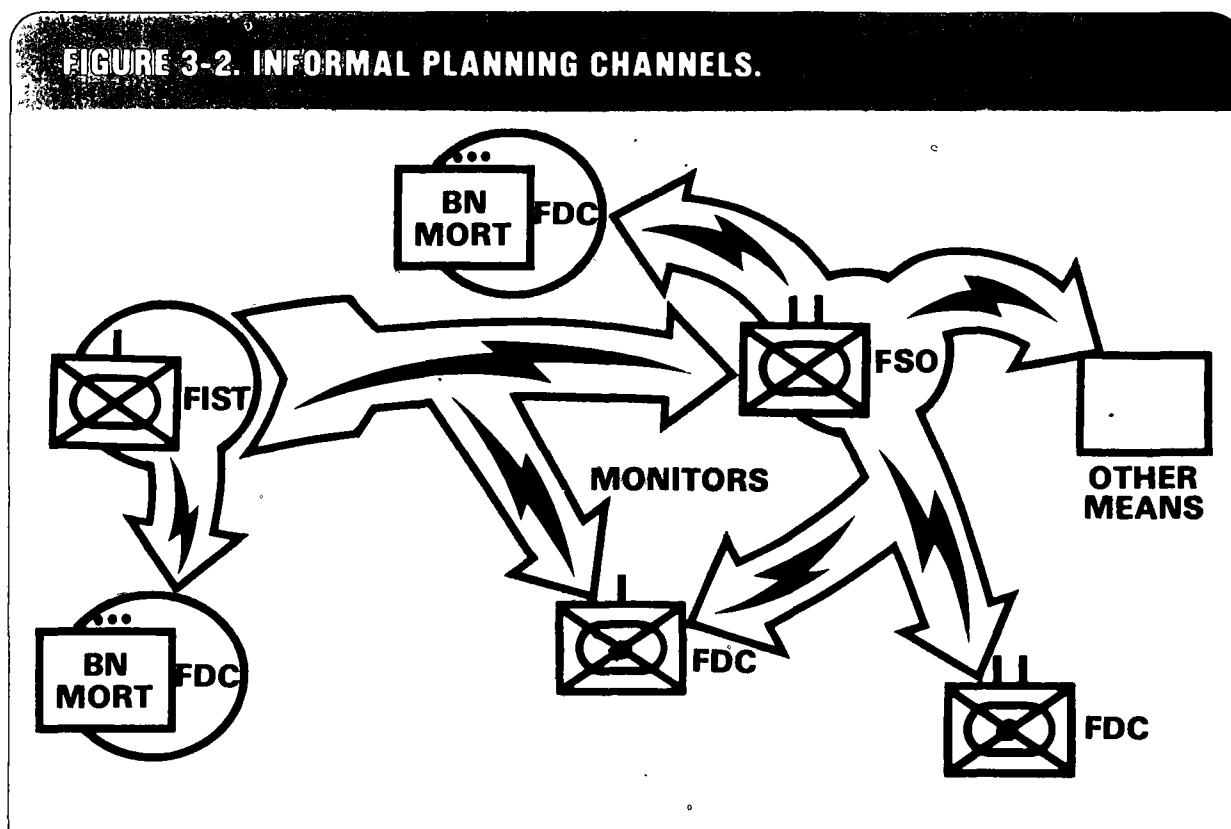
Informal Planning. Informal planning is more dynamic, not usually written, and continually changing because it reacts to rapidly changing combat situations. Like formal planning, informal planning facilitates the information exchange between fire support units and facilitates fire support tasking. This planning occurs at all levels when time and the situation preclude preparing formal plans. Informal fire support planning goes from lower to higher headquarters and is done primarily at the maneuver company (FIST) and battalion (FSO). It may be a FIST member calling in a target to be placed "on call" or an FSO requesting a planned target for his task force.

The FIST continually plans targets and insures that maneuver leaders can identify the targets and associate them with target numbers. These targets are sent to the

company mortar FDC or to the battalion FSO. The FSO resolves conflicts or duplication between units and passes the targets to the direct support battalion FDC, battalion heavy mortars, or other fire support means. The FSO notifies the FIST of all changes to his target list. The FIST and FSO advise commanders on the best fire support means for specific targets—mortars are better than FA; FA instead of CAS; or CAS instead of FA. Planning channels are shown in figure 3-2.

Fire support planning, whether formal or informal, is continuous and concurrent at all force levels. A complete discussion of the planning process is at appendix I. During the battle, planning is concurrent with fire support coordination to implement the fire support plan on the battlefield.

FIGURE 3-2. INFORMAL PLANNING CHANNELS.



3-4. Fire Support Planning

□ What Planning Must Do

The fire support planning goal is to completely integrate fire support with maneuver and to optimize the fire support system.

The planning process determines how fire support will be used—what type targets will be attacked, when, and with what fire support means. It provides sufficient flexibility to accommodate the unexpected in the battle. Fully integrated fire support can result only when the FSCoord is an aggressive contributor to the commander's planning sequence and decisionmaking process.

□ Fire Support Planning Principles

These principles guide the planning of fire support for the battle, and this is how they are translated into actions:

□ *Start planning early and plan continuously.* By starting his planning when the commander receives or assumes the mission and continuing through the termination of the mission, the FSCoord insures that fire support will be fully integrated into the battle plan and execution.

□ *Exploit all available targeting assets.* The FSCoord insures that target information from all sources available at his echelon is rapidly evaluated and routed to the appropriate fire support delivery agency.

□ *Consider the use of all available fire support means.* Each weapon system has different capabilities and limitations that the FSCoord considers. This means considering every available system and putting the best mix on the target.

□ *Select the most effective means.* On the basis of target analysis, weapon characteristics, the mission, and the commander's guidance, the FSCoord recommends the most effective fire support means to attack targets.

□ *Provide adequate fire support.* In assessing adequacy, the FSCoord and the commander visualize the battle from their echelon, and the FSCoord plans fire support against those targets that are of interest to the commander. Weighing the mission requirements against the logistical impact on the fire support system, the FSCoord recommends and the force commander approves the fire support allocation that will best accomplish the mission. The FSCoord also recommends requests for *additional* fire support resources if necessary.

□ *Avoid unnecessary duplication.* During planning, the FSCoord resolves conflicts in fire support to preclude wasting resources. However, economy should not be employed to the detriment of good fire support, and a balance must be struck between the requirement to provide adequate fire support and the tendency to overkill.

□ *Provide for flexibility.* This is accomplished through assignment of missions, organization for combat, judicious allocation of assets, and carefully planned positioning of fire support means. The FSCoord and the commander must visualize the battle and anticipate changes.

□ *Provide for the safeguarding and survival of friendly forces and installations.* The FSCoord and the commander must not only plan safe fires to protect friendly forces, they must also insure that all fires are mission-essential to enhance the survivability of the fire support means. An effective and responsive counterfire program is essential and must be planned. Coordinating measures are recommended to the commander to allow greater fire support responsiveness.

These principles guide the commander and the FSCoord as they plan fire support for the battle. Fire support planning is much more than target planning and choosing the best weapon/ammunition combination for a

target. Allocation, positioning, deceiving, surviving, surveying, and planning the use of intelligence assets are equally important. Good planning facilitates rapid change; it anticipates massing of fires, changes in the force mission, realistic movement times, resupply, target acquisition, and the replacement of entire units. In a word, fire planning is *flexible*.

**APPLICATION OF FIRE SUPPORT
PLANNING PRINCIPLES INSURES THE
FLEXIBILITY NECESSARY TO
ANTICIPATE AND FULFILL FIRE
SUPPORT REQUIREMENTS DURING
RAPIDLY CHANGING
COMBAT SITUATIONS.**

**PLANNING MUST BE GUIDED BY THE
COMMANDER'S PRIORITIES TO INSURE
THAT ENOUGH FIRE SUPPORT ASSETS
ARE AVAILABLE, WHEN AND WHERE
THEY ARE NEEDED, TO MEET THOSE
DEMANDS THAT ARE MOST
IMPORTANT TO HIS MISSION.**

☐ **Priorities for
Fire Support Application**

The vast array of targets anticipated on the battlefield will generate competing demands for fire support, demands that will probably exceed the capability of the system to respond to all requirements. To avoid an overload of the system, the maneuver commander establishes priorities on how he wants to use his fire support assets to meet those demands that are most important to his mission. He expresses his priorities in the allocation of assets, positioning of fire support units, stated constraints to provide for future operations, and guidance on the attack of specific types of targets.

Targets are generally considered in respect to their potential danger to the mission, specifically those that can—

- ☐ *prevent* execution of the plan,
- ☐ *seriously interfere* with the plan,
- ☐ *cause* serious interference later, or
- ☐ *cause limited* interference.

The priorities established by the maneuver commander are the guidelines by which the FSCOORD manages the fire support planning and coordination process.

3-5. Fire Support Coordination

Fire support coordination is the continuing process of *implementing* fire support planning and *managing* the fire support assets that support the maneuver force. When talking about optimizing combat power, fire support planning falls in the "how to" category while fire support coordination falls in the "make it happen" category. The commander and the FSCOORD can weld maneuver and fire support together only through concerted coordination.

□ Fire Support Coordination Principles

Fire support planning and coordination are simultaneous actions, so while planning continues, the coordination of the plan—making it happen—begins.

The following coordination principles closely parallel the planning principles and, like them, aim for the best possible use of fire support. This is how the principles are translated into action:

Insure a continuing flow of targeting information. The FSCOORD must insure that the targeting information, including that available to the maneuver S2/G2 at his echelon, continues to flow into the fire support system.

Consider use of all available fire support means. The FSCOORD must think total assets and not limit the commander to a particular weapon system. As the battle develops, a vast array of targets will appear that require the variety of capabilities offered by the full spectrum of fire support means.

Use the lowest echelon capable of furnishing effective support. This provides economy of force and flexibility to the commander in the use of uncommitted assets. If mortars will do the job, do not use a battery of artillery or an airstrike—save those assets for use elsewhere.

Use the most effective means. Fire missions should be assigned to the agency that can provide the most effective fire support. The FSCOORD must consider the target, the responsiveness needed, and the capabilities of the weapon system. Sometimes it may be necessary to use a less effective means to temporarily fix or suppress a target until a more effective means can attack.

Furnish the type of support requested. The requesting agency is normally in the best position to determine its immediate fire support needs. However, the commander's guidance, the established priorities, and the availability of assets weigh heavily on the type of support delivered.

Avoid unnecessary duplication. Fire support resources must not be wasted by unnecessary duplication of effort. As the focal point of fire support, the FSCOORD resolves duplication to insure that fire support is applied efficiently.

Consider airspace coordination. Ground and air fire support means must not become mutually interfering to the detriment of continuous support to the maneuver force. FM 100-42, *Airspace Management in Area of Operations*, discusses airspace management and the responsible agencies.

Provide rapid coordination. Procedures must be established and practiced to effect the rapid coordination required to attack targets quickly. The procedures and techniques used must provide for coordination at the lowest echelon required by the mission. The FSCOORD must be constantly alert for any fire support means, facility, procedure, or technique that slows the coordination of fire support. A primary means of effecting rapid coordination is through the carefully planned use of coordinating measures.

Insure the continued safeguarding of friendly elements. Coordinating measures must be continually evaluated and instituted,

FIRE SUPPORT COORDINATING MEASURES ESTABLISH RULES AND GUIDELINES FOR SELECTED AREAS OF THE BATTLEFIELD FOR A GIVEN PERIOD OF TIME. THEY ASSIST THE FSCOORD IN: FACILITATING RAPID COORDINATION OF FIRE SUPPORT, INSURING TROOP SAFETY, MAXIMIZING APPLICATION OF ALL FIRE SUPPORT MEANS, AND COMPLEMENTING ADJACENT UNIT OPERATIONS.

shifted, or eliminated as the situation requires. Similarly, counterfire requirements and postures must be continually evaluated to insure that friendly elements have the best possible protection from enemy fire.

☐ **Fire Support Coordination Measures**

The FSCOORD coordinates all fire support impacting in his zone, or sector, including that requested by his supported unit. The FSCOORD insures that fire will not jeopardize troop safety, interfere with other fire support means, or disrupt adjacent unit operations. This is handled in several ways:

Boundaries establish the operational zone or sector for a maneuver unit and the area in which the commander fires and maneuvers freely. Boundaries are determined and described using the methods presented in STANAG 2029 and QSTAG 538, *Method of Describing Ground Locations, Areas and Boundaries*. They prohibit others from firing into that zone without first coordinating.

Coordinating measures, depending upon the type, designate portions of the battlefield where fires may be delivered without further coordination as well as those areas in which some restriction has been placed on the delivery of fire. The FSCOORD *recommends* them and the commander *establishes* them. They facilitate operations by establishing rules and guidelines for selected areas for a given period of time. They define the need for further coordination. There are two categories of coordinating measures: permissive and restrictive.

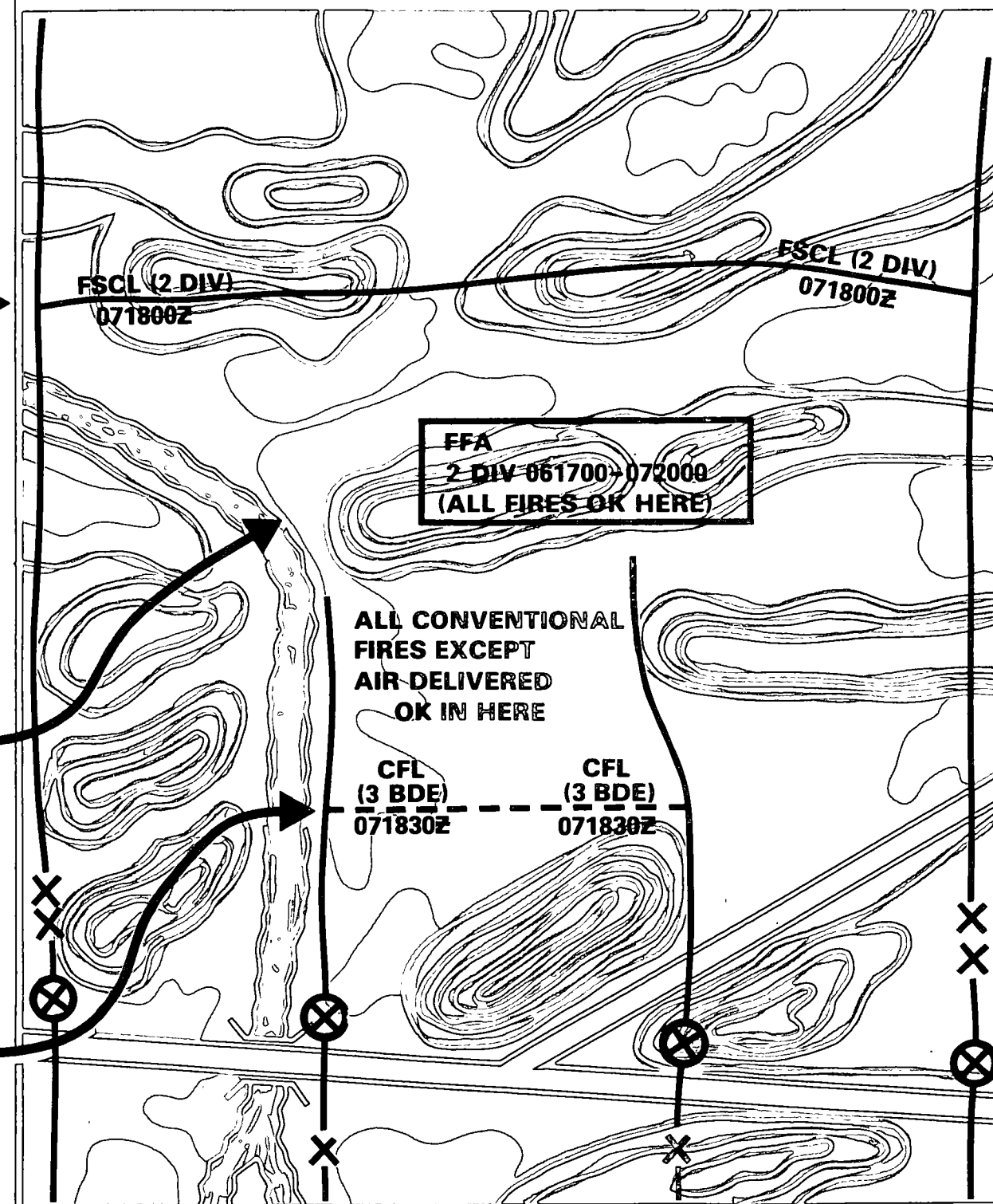
Permissive measures are drawn in BLACK on overlays/maps. They are titled and indicate the establishing headquarters and the effective date-time group. Permissive measures increase responsiveness by permitting engagement of targets beyond the line or into an area without further coordination and thus save time.

FIGURE 3-3. PERMISSIVE COORDINATION MEASURES.

Fire Support Coordination Line (FSCL)—a line beyond which all targets may be attacked by any weapon system (including aircraft and special weapons) without endangering friendly troops or requiring additional coordination with the establishing headquarters. The purpose of the FSCL is to expedite the attack of targets beyond the fire support coordination line. No additional coordination is required if neither the fires nor their effects fall short of the FSCL. The US, when operating within the ABCA (America, Britain, Canada, Australia) alliance and within the NATO alliance, must acknowledge and accept the CFL and FSCL measures stated in STANAG 2099, *Fire Coordination in Support of Land Forces*, subscribed to by the US. The details of the agreement and the fire support coordination line message are in appendix M.

Free-Fire Area (FFA)—in fire support operations, an area into which any fire support means may fire without coordination. The purpose is to expedite fires.

Coordinated Fire Line (CFL)—in fire support operations, a line beyond which mortars, FA units, and naval gunfire ships may deliver surface-to-surface fires at any time without coordination within the zone of the establishing headquarters. The purpose of the CFL is to expedite attack of targets beyond the CFL.



FOLD OUT FOR
PAGE 3-15 WITH FIGURE 3-3.

Restrictive measures are drawn in RED. They are titled and indicate the establishing headquarters and the effective date-time group. Restrictive measures mean that fires, or the effects of fires, into an area or across a line must be coordinated with the establishing headquarters or the affected force on a mission-by-mission basis. These are the *restrictive measures*:

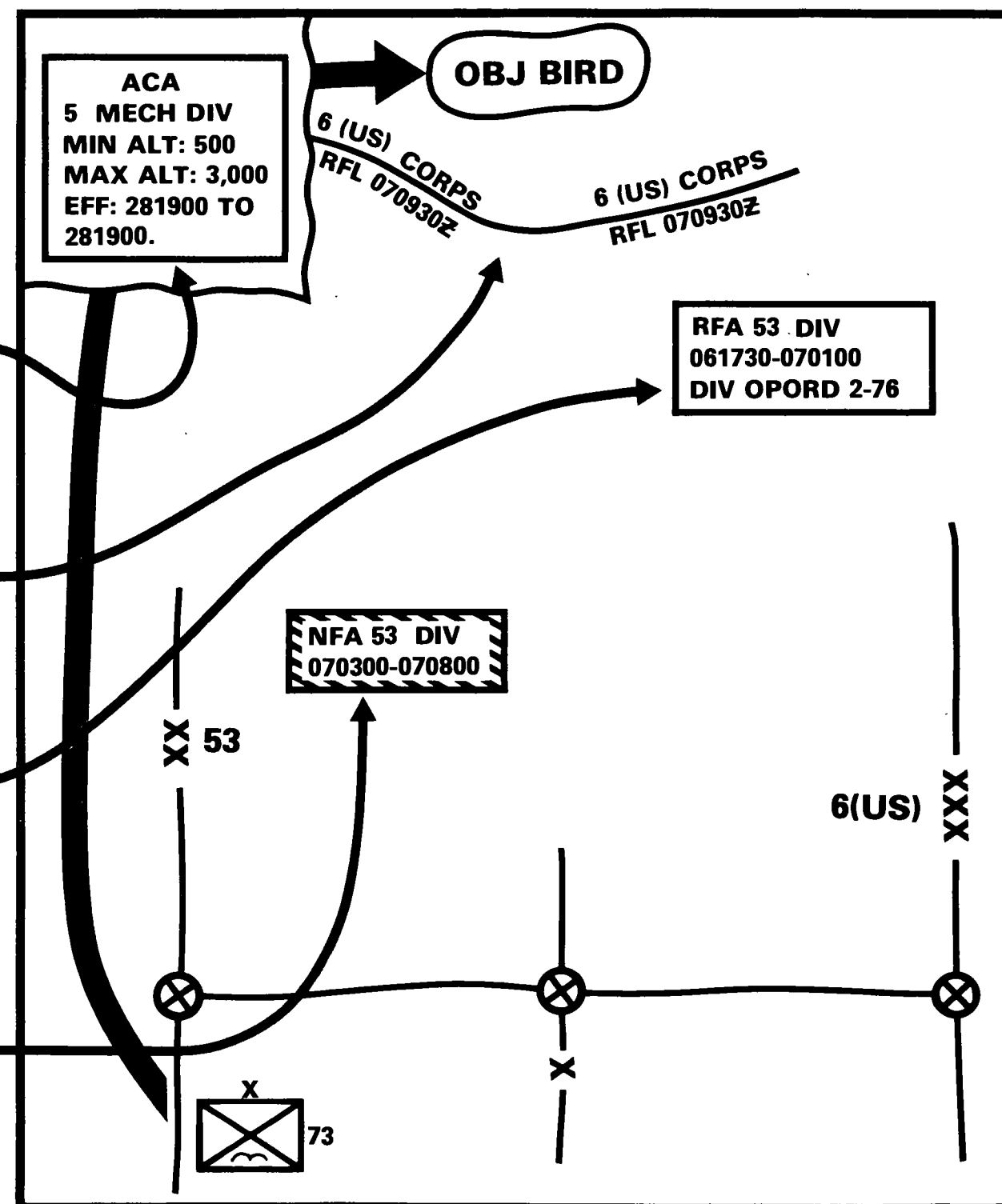
Airspace Coordination Area (ACA)—in fire support operations, a safety measure that establishes a three-dimensional area (corridor/lane) that is reasonably safe from friendly surface-delivered nonnuclear fires. Frequently, it will be *informal* ("keep the FA and NGF north of GREEN RIVER, CAS to the south"). See appendixes I and J for details.

Restrictive Fire Line (RFL)—a line established between converging friendly forces (one or both may be moving) that prohibits fires or effects from fires across the line without coordination with the affected force. The *purpose* of an RFL is to prevent interference between converging friendly forces.

Restrictive Fire Area (RFA)—an area in which specific restrictions are imposed and into which fires that exceed those restrictions may not be delivered without coordination with the establishing headquarters. The *purpose* of an RFA is to regulate fires into an area according to the stated restrictions.

No-Fire Area (NFA)—an area in which no fire or the effects of fires are allowed. Two exceptions are: (1) when establishing headquarters approves fires (temporarily) within the NFA on a mission basis, and (2) when an enemy force within the NFA engages a friendly force, the commander may engage the enemy to *defend his force*. The *purpose* of the NFA is to prohibit all fires or their effects into an area without prior clearance.

FIGURE 3-4. RESTRICTIVE COORDINATING MEASURES



□ Target Numbering

In fire support operations, a standard numbering system is used to designate targets. This system is used within a major tactical command (usually a corps). Control of the system is exercised through fire support and fire direction facilities. The system provides a ready reference for targets and facilitates identification of the planning agency. Within this system, each target has an alphanumeric designation consisting of

two letters followed by four numerals (e.g., AA1000). The US, when conducting operations within the ABCA alliance and within a NATO alliance, must use the target numbering system subscribed to by the US in NATO STANAG 2147 and its ABCA counterpart QSTAG 221, *Target Numbering System (Nonnuclear)*. These agreements are implemented in this manual. Appendix H, paragraph H-3, provides the details and guidance for target numbering.

Letters Assigned To

First letters:

A thru G First letters for division (in numerical order, low to high)

XA thru XG Sep regts/bdes (in numerical order, low to high)

XY O/I elm, FAS (Corps)

XZ Corps FSEs

Second letters, by divisions:

A thru G Bdes in numerical order

Y Division artillery TOC

Z Division FSEs

Numbers

Blocks of numbers are assigned by the headquarters having two assigned letters. FA elements with second letters of Y and Z assign blocks as needed. Normally, the block of 8000-9999 is not used. Maneuver elements with the second letters of A through G assign numbers as follows:

0001-1999

2000-2999

3000-3999

4000-4999

5000-6999

7000-7999

8000-9999

FSE

*FSO, lowest numbered maneuver bn/sqdn

FSO, 2d bn/sqdn

FSO, 3d bn/sqdn

Additional FSOs

FDC, DS FA

**As required

**Lowest regimental number. Example: FSO, 2-406 Inf, before FSO, 1-407 Inf.*

***Block 8000-8999 may be reserved for counterfire targets. Block 9000-9999 may identify toxic chemical targets.*

Maneuver battalion (squadron) size elements sub-allocate numbers as follows:

000-199

200-299

300-399

400-499

500-699

700-799

800-999

FSE

***FIST, Co A

FIST, Co B

FIST, Co C

Additional FISTs

Bn mort plt/sqdn

How btry

As needed

****FISTs get additional numbers from FSO.*

A sample use of the target numbering system is as follows: A target is numbered CB1051. The letter "C" indicates the target was planned by the third lowest numbered division. The letter "B" is for the 2 Bde,

while the number "1051" comes from the block of the FSE.

Additional discussion of target numbering is available in appendix H and in STANAG 2147.

3-6. Target Acquisition for the Fire Support System

☐ Target-Producing Assets

The fire support system has many target-producing assets. Those dedicated assets directed toward a particular component of the fire support system—such as the FA target acquisition battery—will be discussed as a part of that subsystem.

The "grass roots" of the target acquisition effort is the FIST observer. These observers, deployed at company/company team and

platoon levels, acquire targets for the *entire* FS system—not just field artillery. The FIST chief is the FSCoord at company level and he, with the company commander, decides when to call for FA, mortars, CAS, or NGF. The FIST is a valuable collector of target data. It observes the battlefield to detect, identify, and locate targets; and it establishes communications with the task force FSO, the company team, and FA and mortar FDCs as required. (See appendix G for a detailed discussion of the FIST.)

Moving up from company level in the maneuver chain, more and more targeting systems are encountered.

INTELLIGENCE ASSET AVAILABILITY.

	Battalion	Brigade	Division	Corps
SIGNAL INTELLIGENCE (SIGINT)				
Communications Intelligence (COMINT)		☐	☐	☐
Electronic Intelligence (ELINT)		☐	☐	☐
REMOTE SENSORS (REMS)	☐	☐	☐	
GROUND SURVEILLANCE RADAR (GSR)	☐	☐	☐	
IMAGERY				
Photo				☐
Infrared (IR)			☐	☐
Side-Looking Airborne Radar (SLAR)			☐	☐
RECONNAISSANCE UNITS	☐		☐	☐
INTERROGATION OF PRISONERS OF WAR (IPW)		☐	☐	☐
GENERAL AVIATION SOURCES		☐	☐	☐

All of these intelligence assets produce information that will greatly aid in fire support targeting, and all are available to the FSCoord. It is the FSCoord's responsibility at each of these levels to insure that all available targeting agencies are used.

At maneuver battalion level, for example, remote sensors (REMS) may be used in the intelligence collection effort. The battalion FSO must coordinate with the maneuver battalion S2 to insure that appropriate targeting information resulting from this collection effort is rapidly forwarded to the DS FA battalion for targeting and, where appropriate, for attack.

Similarly, the maneuver brigade FSO has a like responsibility with respect to target information available at the maneuver brigade.

A particularly important potential targeting asset is the EW company. These units have the capability to listen (intercept), locate (direction finding), and disrupt (jam and deceive) enemy radios and radars. By establishing an interface with the EW personnel, the FSCoord, at division for example, can insure that this valuable and effective targeting asset is used. A particularly important potential targeting asset is the collection and jamming platoon (EW). This unit has a capability to listen, disrupt, deceive, and locate enemy radars and radios. The locating (direction finding) is achieved through coordination with the EW company at division.

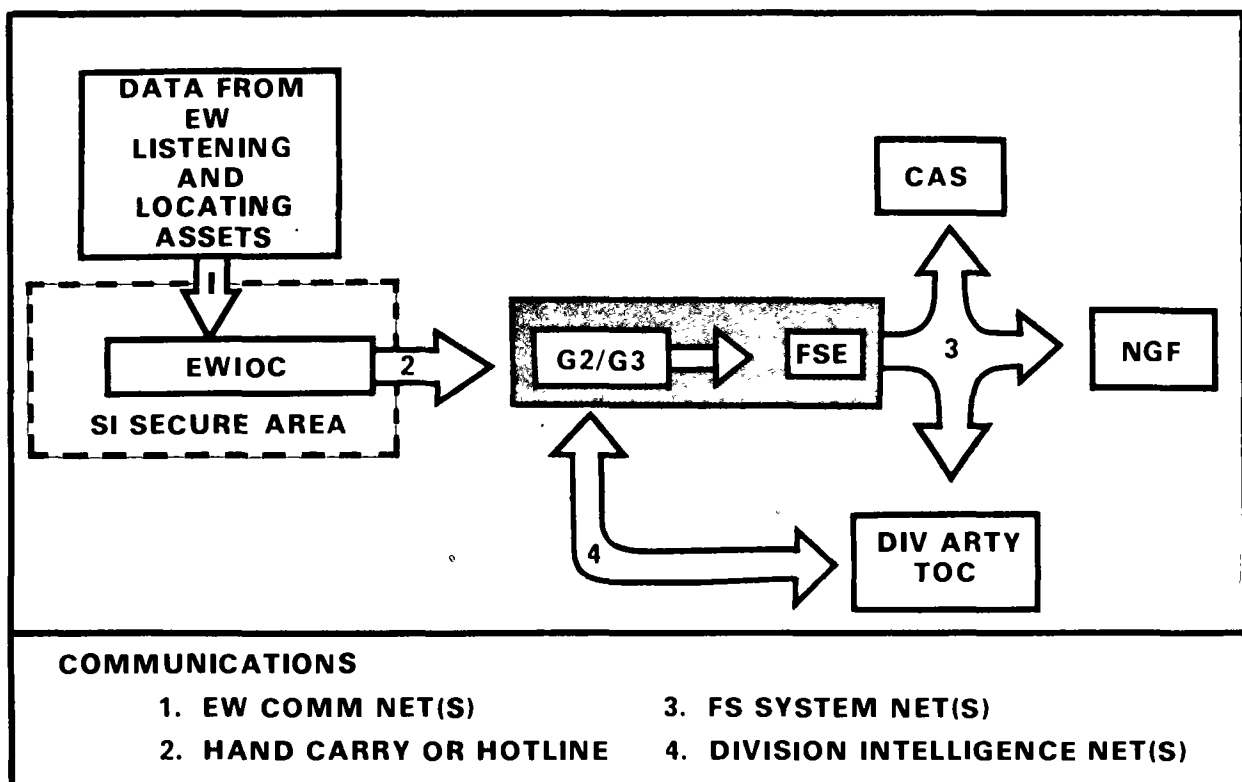
Most of the coordination between fire supporters and EW personnel takes place in the division main command post. Key individuals involved are:

- ☐ G3 and the assistant G3 (combat electronic warfare staff officer).
 - ☐ G2 and senior tactical intelligence officer (or order-of-battle warrant officer) located in the special intelligence (SI) secure area.
 - ☐ The AFSCoord in the fire support element and his artillery intelligence officer (AIO).
 - ☐ The division EW company commander.
 - ☐ The officer in charge of the combat electronic warfare intelligence and operations center (CEWI element).
- The physical location of these personnel and their staff relationships will vary somewhat from division to division; therefore, the procedures described here for coordinating matters of mutual interest to the FSCoord and G2 are provided as a guide.
- ☐ **Collection of Targeting Data**
- The first step in acquiring timely, accurate targets from EW assets is for the FSCoord to state to the G2 the need for targeting information.
- There may be conflicting requirements for EW collection assets from the FSCoord and other requestors. Therefore, priorities for the collection of information are determined by the commander. As intelligence needs become apparent, requests are passed to the G2 for collection action.
- The following are examples of the FSCoord's specific intelligence needs:
- ☐ From where will the enemy fire nuclear weapons?
 - ☐ Where are the enemy 122-mm multiple rocket launchers?
 - ☐ Where are enemy countermortar/counterbattery radars located?
 - ☐ Where are the enemy artillery command observation posts?

The intelligence collection requirements recommended by the FSCoord will be considered by the G2 along with the requests for information submitted by other units and the division staff on the basis of the division commander's specific intelligence requirements. Changes in the mission will, of course, cause the requirements for information to change. Figure 3-5 shows the normal flow of data from EW units to the fire support system.

If the FSCoord feels that this standard setup is not sufficiently responsive to insure effective target attack—and if the division commander approves—several steps may be taken to speed up the flow of certain types of targets to specific fire support delivery agencies. For details on these arrangements, see Appendix A, *Target Acquisition*.

FIGURE 3-5. FLOW OF DATA, EW UNITS TO FIRE SUPPORT SYSTEM.



3-7. Field Artillery

The mission of the field artillery is to destroy, neutralize, or suppress the enemy by cannon, rocket, and missile fire and to assist in integrating all fire support into combined arms operations.

Responsiveness, flexibility, and effectiveness dictate that field artillery is the maneuver commander's primary means of fire support. It has an acquisition capability, a variety of weapons and ammunition, and a responsive and accurate gunnery team. The command, control, and coordination element rapidly processes information to attack targets.

The following paragraphs describe each fire support asset and its contribution to the total fire support system. Each asset is discussed independently to provide continuity of thought and ease of reference.

☐ FA Target Acquisition

Weapons and ammunition are scarce, targets are plentiful, and the pace of battle is fast. Accordingly, effective *first-round fire* is critical. We are vulnerable to detection by sophisticated devices and attack by an imposing array of highly lethal weaponry. This makes early, deep location and attack of enemy targets critical. We must attack and destroy the enemy before the enemy attacks and destroys us.

The division artillery commander uses the division artillery's organic target acquisition assets and combines their data with all sources of intelligence to produce targets. The target acquisition assets available to the division artillery commander are:

The Target Acquisition Battery (TAB). The TAB has five weapon-locating radars, one moving-target-locating radar (MTLR), two sound bases, and eight flash OPs. It processes target information from the battery and other target intelligence agencies. The TAB processing section functions in the division artillery tactical operations center.

Aerial Observers (AOBSR). Aerial observers are a lucrative source of combat information and intelligence. Division artillery has eight AOBSRs and the field artillery brigades have four. These observers are employed as necessary under artillery control to support committed maneuver brigade or cavalry squadron operations. AOBSRs can be attached to or placed under the operational control of FA battalions supporting maneuver elements. When under div arty control in the zone of a committed unit, coordination is established with that unit. Target information is transmitted by the observer to that unit's direct support field artillery battalion or to the division artillery tactical operations center. The TOC

designates a firing unit to attack the target and coordinates the fire. Helicopter pilots assigned to the cavalry squadron can call for and observe artillery fires.

The FA AOBSRs are paired with the helicopter pilots as aerial observer teams. These teams increase the target-acquiring "eyes" of the division and facilitate comprehensive visual coverage of an expanded battlefield.

The div arty commander integrates the target information from these organic sources with the target information gleaned from the other intelligence agencies mentioned earlier (fig 3-6).

FIGURE 3-6. INTEGRATION OF TARGET INFORMATION.

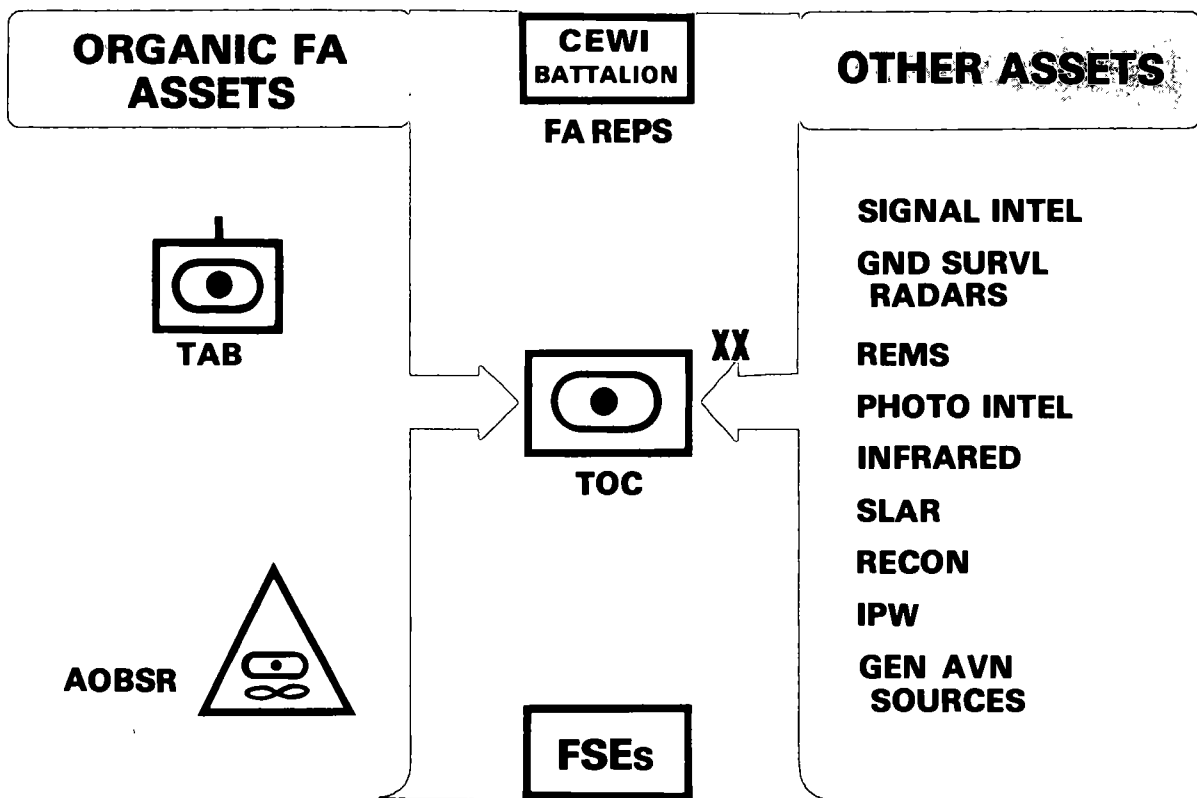
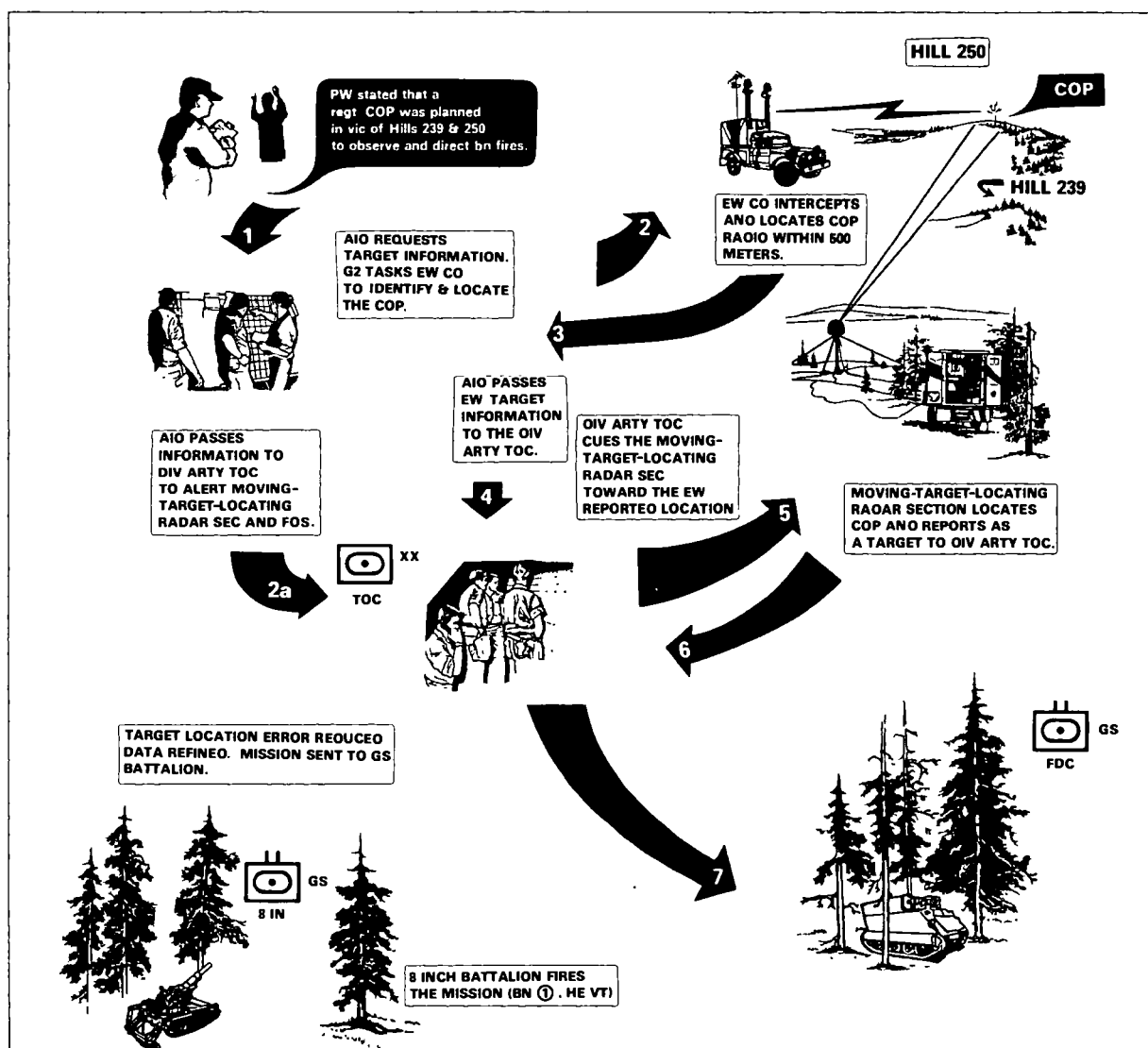


Figure 3-7 demonstrates how a target location might be developed by use of multiple sources of target information and intelligence. The target may be attacked based on a sole source of intelligence (IPW report) or at any other stage of development if

the need for immediate attack outweighs the advantages gained by refinement of target location.

Priorities for use of division intelligence agencies such as the EW company, of course, are established by the division commander.

FIGURE 3-7. DEVELOPMENT OF TARGET LOCATIONS.



FA ORGANIZATIONS AND WEAPONS - BY DIVISION TYPE

TYPE WPN	CANNON					MISSILE		
		105(T)	155(T)	155(SP)	8"(SP)		Lance	PSG*
NO WPNS PER BN		18	18	18	12		6	36
MECH/ ARMD DIV				3 Bn	1 Bn			
INF DIV		3 Bn	3 Btry **		1 Btry **			
ABN DIV		3 Bn						
AASLT DIV		3 Bn	1 Bn					
SEP MECH/ ARMD BDE				1 Bn				
SEP INF/ ABN BDE		1 Bn						
ARMD CAV REGT				3 Btry				
FA BDE		Up to six battalions. Variable mixture by caliber and mobility based on mission.						

*The Pershing missile is a theater weapon.

**Composite battalion.

☐ FA Ammunition

A variety of FA ammunition is available and includes:

- ☐ high explosive (HE),
- ☐ high explosive antitank (HEAT),

- ☐ smoke,
- ☐ illumination (illum),
- ☐ white phosphorus (WP),
- ☐ chemical,
- ☐ nuclear,
- ☐ beehive (flechette),
- ☐ improved conventional munitions (ICM)—antipersonnel (AP) and dual purpose (DP)—and
- ☐ family of scatterable mines (FASCAM).

Various fuzing options increase munition lethality. Fire direction officers select the best ammunition and fuze combination for each mission.

Ammunition Basic Loads. A basic load of ammunition is "that quantity of nonnuclear ammunition authorized to a unit for wartime purposes. The basic load provides the unit sufficient ammunition to initiate combat and sustain itself until resupplied." Factors in determining a basic load for *any* combat unit include:

- ☐ type and intensity of combat expected and
- ☐ resupply capability of the unit support system.

When determining the basic load for *field artillery* battalions, it is also necessary to take into consideration the ammunition transport capability of the unit. If a unit's basic load *exceeds* its ability to transport ammunition, then arrangements must be made to either prestock ammunition in new firing positions or secure additional transportation assets to move the ammunition about the battlefield (see appendix B for further discussion of FA weapons and ammunitions).

☐ **Field Artillery Capabilities and Limitations**

The coordinated power of the FA system provides a significant capability for the commander, but there are limitations that

must be understood and considered. First, the field artillery *capabilities* are to—

- ☐ provide fire support under all conditions of weather and types of terrain,
- ☐ shift and mass fires rapidly without the requirement to displace,
- ☐ add depth to combat with long-range fires,
- ☐ fire a variety of conventional shell/fuze combinations,
- ☐ deliver nuclear and chemical fires,
- ☐ provide continuous support by judicious displacement, and
- ☐ be as mobile as the supported unit.

The *limitations* of field artillery are:

- ☐ limited self-defense capability against ground and air attack,
- ☐ limited ability to destroy point targets without considerable ammunition expenditure, and
- ☐ firing signature, which makes it vulnerable to detection by enemy target acquisition assets.

☐ **FA Gunnery**

The FA gunnery system is a combination of the people, equipment, and procedures that produce firing data to attack targets. It consists of five essential elements:

- ☐ observers,
- ☐ the fire direction center,
- ☐ the firing battery,
- ☐ survey, and
- ☐ meteorology.

Observers—which include target acquisition devices—detect and report target locations, initiate calls for fire to the FDC, and adjust fires.

The FDC evaluates observer information, determines firing data, and transmits fire commands to the firing unit(s). FM 6-40, *Field Artillery Cannon Gunnery*, discusses FA gunnery in detail.



The firing battery sets the firing data on weapons and fires the mission. (FM 6-50, *The Field Artillery Cannon Battery*, discusses firing battery operations in detail.)

Survey determines precise weapon and target locations and provides weapon and target acquisition oriented data. Division artillery provides survey control to FA battalions for position, connecting, and target area surveys. Survey provides a common grid for:

- ☐ *massing of fires,*
- ☐ *delivery of surprise fires,*
- ☐ *delivery of effective unobserved fires, and*
- ☐ *transfer of target data from one point to another.*

Note. FM 6-2, *Field Artillery Survey*, discusses survey operations in detail.

Meteorology provides atmospheric data for ballistic corrections and for sound ranging. Division artillery meteorology assets provide ballistic messages, fallout prediction messages, sound-ranging messages, and Air Weather Service meteorological data. (FM 6-15, *Artillery Meteorology*, discusses meteorological operations in detail.)

☐ **Field Artillery Command Control**

For this discussion, command refers to the various headquarters with fire support responsibilities and the relationship between maneuver and fire support commanders in those headquarters. Control is discussed in terms of standard and nonstandard tactical missions and organizations for combat.

Command control of FA is accomplished at three major levels of maneuver command:

- ☐ corps,
- ☐ division, and
- ☐ separate brigade/armored cavalry regiment.

Field Artillery Command

Corps. FA units retained at corps are commanded by the corps field artillery officer (07). He serves in the dual capacity of corps special staff officer for fire support and commander of FA units not organic, assigned, or attached to subordinate maneuver units. Corps level artillery normally is organized into field artillery brigades tactically tailored with either cannon or missile battalions.

Command control of Lance brigades normally is retained by corps. Cannon brigades with various calibers of FA battalions normally augment the artillery of the divisions. This is done by attaching the FA brigade to a division or by giving the brigade a reinforcing mission.

Division Level. Command of field artillery is exercised by the division artillery (div arty) commander. Div arty provides field artillery for the division as a whole.

Separate Commands. FA units organic to separate brigades and the squadrons of the armored cavalry regiment (ACR) are commanded by the commanders of those maneuver units. When a separate brigade or an ACR is attached to a division, the organic FA units normally are attached to the div arty of the gaining division. This establishes a unique command control relationship between the artillery commanders concerned. The separate unit commander has access to the same FA support as organic commanders.

FA Battalion Groups. Upon rare occasions and for short periods of time, it may be necessary for a commander to attach one FA battalion to another to form an FA battalion group. This is discussed in detail at appendix B.

The detailed composition of field artillery batteries is discussed in FM 6-50. FA battalions are also discussed in FM 6-20-1. FM 6-20-2 discusses the organization and operations of division artillery, the field artillery brigade, and higher FA levels. The impact of the tactical fire direction system (TACFIRE) on command control of the FA is discussed in FM 6-1, *TACFIRE Operations*.

Field Artillery Control. Tactical control of FA is accomplished through the organization of FA for combat. When organized for combat, each FA unit is placed within a tactical organization and assigned a tactical mission. Assigning a tactical mission tells the FA unit what its job is. The FSCoord and the maneuver commander must understand the standard field artillery

tactical missions and the inherent responsibilities associated with each.

FA Tactical Missions. Standard and nonstandard tactical missions are recommended by the force field artillery commander and assigned by the force commander. There are four US field artillery tactical missions. Allied nations may have additional or different standard missions. The tactical missions for allied nations are described in STANAG 2887, *Tactical Tasks and Responsibilities for Control of Artillery*. The four US tactical missions are:

1 Direct support (DS) is the most demanding standard mission. It gives an artillery unit's fires almost exclusively to the supported maneuver element. A battalion with a DS mission:

- ☐ furnishes close and continuous fire support to a *single* maneuver element, normally a brigade;
- ☐ is habitually DS to the same maneuver element to facilitate combined arms teamwork; and
- ☐ is commanded by the force field artillery commander.

Only during a movement to contact, and then on rare occasions, the DS mission may be extended by *dedicating* the fires of a battery to a lead company team. FM 6-40 and chapter 4 and appendix B of this manual discuss the *dedicated battery*.

2 Reinforcing (R) is a tactical mission that causes one FA unit to augment the fires of *another* FA unit that cannot provide sufficient fires for the supported force. For example, one or more FA battalions can reinforce the fires of a DS FA battalion, and an FA brigade may reinforce the fires of a division artillery. A unit with a reinforcing mission:

- ☐ adds to the close and continuous fires of the reinforced unit and
- ☐ is commanded by the force field artillery commander.

3 General support-reinforcing (GSR) units support the entire force and augment the fires of designated force field artillery units when

not providing GS fires. GSR units are controlled by the force FA headquarters and are not committed to subordinate elements of the force.

4 *General support (GS)* units also support the entire force. They remain under the control of the force FA headquarters and are not committed to any subordinate element of the force.

US STANDARD TACTICAL MISSIONS

	1	2	3	4
An FA unit with a mission of—	Direct Support (DS)	Reinforcing (R)	General Support-Reinforcing (GSR)	General Support (GS)
1. Answers calls for fire in priority from—	1. Supported unit. 2. Own observers.* 3. Force FA HQ.	1. Reinforced FA. 2. Own observers.* 3. Force FA HQ.	1. Force FA HQ. 2. Reinforced FA. 3. Own observers.*	1. Force FA HQ. 2. Own observers.*
2. Has as its zone of fire—	Zone of action of supported unit.	Zone of fire of reinforced FA.	Zone of action of supported unit to include zone of fire of reinforced FA.	Zone of action of supported unit.
3. Furnishes FIST/FSO**—	Provides temporary replacements for casualty losses as required.**	No requirement.	No requirement.	No requirement.
4. Furnishes LO—	No requirements.	LO to reinforced FA HQ.	LO to reinforced FA HQ.	No requirement.
5. Establishes communications with—	FIST chiefs, FSOs, and supported maneuver unit HQ.	Reinforced FA HQ.	Reinforced FA HQ.	No requirement.
6. Is positioned by—	DS FA commander as ordered by force FA HQ.	Reinforced FA or as ordered by force FA HQ.	Force FA HQ or reinforced FA if approved by force FA HQ.	Force FA HQ.
7. Has its fires planned by—	Develops own fire plans.	Reinforced FA HQ.	Force FA HQ.	Force FA HQ.

*Includes all target acquisition means not deployed w supported unit (e.g., radar, FA AOBSR, and survey parties).

**The DS battalion *trains* and *initially deploys* one FSO team with each maneuver battalion and one FIST with each maneuver company in the supported brigade. After deployment, FIST and FSO teams will *remain* with the supported maneuver unit throughout the conflict.

There are seven inherent responsibilities associated with each tactical mission. The figure (on facing page) shows the four US standard tactical missions. Figure B-2(b), Tactical Tasks and Responsibilities for Control of Artillery (ABCA), and B-2(c), Tactical Tasks and Responsibilities for Control of Artillery (NATO), show the tactical mission tasks and their inherent responsibilities for all alliance nations (ABCA-NATO). This is in agreement with US-ratified NATO STANAG 2887 and ABCA QSTAG 217.

When a standard tactical mission will not do the job for the commander, a nonstandard tactical mission is assigned. This is done by:

- ☐ assigning a standard mission with explicit changes or
- ☐ issuing explicit instructions for each of the seven inherent responsibilities.

Examples of Nonstandard Missions

1-42 FA: R 1-41 FA—*Div arty will approve positioning.*

196 FA Bde: GSR 20 Mech Inf Div Arty—*Do not reinforce 20 Div Arty with more than 30 percent of controlled supply rate (CSR).*

1-43 FA: Augment the fires of 2-3 FA.

- (1) Answer calls for fire in priority from 2-3 FA, 2-12 Cav, and 20 Div Arty.
- (2) Zone of fire to be assigned by div arty.
- (3) No FIST requirement.
- (4) Establish liaison with 2-3 FA.
- (5) Establish communications with 2-3 FA and 2-12 Cav.
- (6) Div arty will position.
- (7) Div arty will plan fires.

Organizing for Combat. The division artillery commander recommends the FA organization for combat to the division commander. They are together and decide

which assets are kept at division and which are immediately responsive to the brigades. This allocation is changed as required by the battle situation.

Fundamentals of Organizing for Combat. Assets are provided for close, continuous, and responsive support to the maneuver brigades. Some assets must also be responsive to division for counterfire, targets beyond the brigade zones, and interdiction. The division commander must influence the fight at critical times, and he needs immediately responsive field artillery to do it. The fundamentals of FA organization for combat guide the commander in distributing his assets.

1

Use maximum feasible centralized control. Field artillery is most effective when control is centralized at the highest level that can maximize its capabilities and meet mission requirements. Centralized control permits flexible employment and effective support to each command element and the total force. The degree of centralized control varies with each tactical situation, but the following are general guidelines:

- ☐ *Use a high degree of centralized control in the defense.* The enemy has the initiative, and it is difficult to predict when and where he will strike. Accordingly, the commander uses more centralized FA control to influence the action where it may develop.
- ☐ *Use less centralized control in the offense.* The supported force has the initiative, and the close combat units need flexibility to retain the initiative and maintain the attack momentum. Subordinate field artillery commanders also need flexibility—less centralized control—to act responsively and focus on fire support for the close combat elements.

Centralized control is attained by:

- ☐ assigning more GS and GSR missions and fewer DS and R, and
- ☐ assigning nonstandard missions that retain positioning authority and ammunition allocations.

**THE FUNDAMENTALS OF ORGANIZING
FOR COMBAT ARE AIMED AT
PROVIDING FLEXIBLE ALLOCATIONS
OF FIELD ARTILLERY FOR QUICK
REACTION TO THE CHANGING
REQUIREMENTS OF THE
BATTLE SITUATION.**

FA units normally are not attached to maneuver units unless distance, communications, or control problems require it. Attachment changes the command structure, and the FA commander's capability to meet the force commander's requirements is reduced.

2

Provide adequate support for committed units. An FA battalion is most responsive when in direct support of a committed brigade. Only one FA unit will be DS to a maneuver unit. More firepower is provided when other field artillery units are reinforcing or general support-reinforcing to the direct support battalion. Additional support from GS units can be provided by positioning them and assigning directions of fire.

3

Weight the main attack and strengthen the most vulnerable area. In the offense, the main attack is weighted. In the defense, weight is given to covering forces first, then to the most vulnerable part of the main battle area. Weighting is accomplished by:

- ☐ Assigning reinforcing or general support-reinforcing missions to provide immediately responsive fires for the forces in contact.
- ☐ Positioning GS FA units and assigning a direction of fire that concentrates their fires in the critical sector or zone.
- ☐ Allocating more ammunition to increase fire support.

4

Facilitate future operations. This fundamental is implemented by assigning tactical missions, positioning, and allocating ammunition. Its purpose is to counteract unforeseen circumstances and insure a smooth transition between operational phases. Assigning an on-order mission allows a unit to anticipate future fire support needs.

5

Provide immediately available support so the commander can influence the action. The force field artillery commander must retain enough immediately available fire support to

decisively influence the action. These are general support or general support-reinforcing units. They are responsive to the force commander because their priority of fires is to force field artillery headquarters.

Example of Organization for Combat

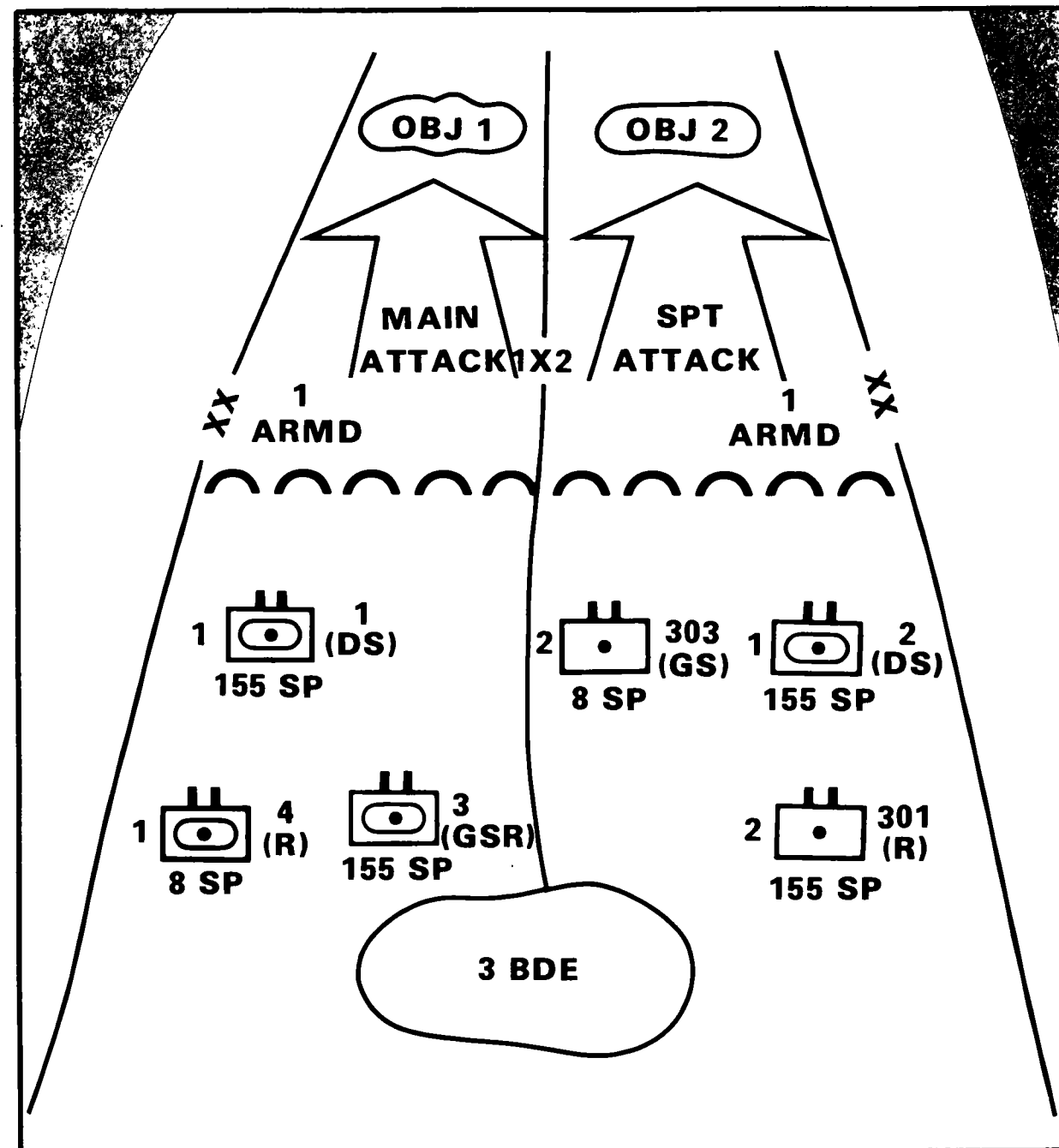
Situation: The 1st Armored Division is attacking to the north with the 1st Brigade on the left, 2d Brigade on the right, and 3d Brigade in reserve. 1st Brigade is making the main attack to seize Objective 1 in zone. Both brigades are in contact; the lightest resistance is in 1st Brigade zone. The 3d Brigade is prepared for commitment in 1st Brigade zone to continue the attack. Corps has attached one battalion of 155-mm howitzers (SP) and one battalion of 8-inch howitzers (SP) to the division. The artillery available to the division is:

ORGANIZATION FOR COMBAT

1 Bn (155 SP), 1 FA
1 Bn (155 SP), 2 FA
1 Bn (155 SP), 3 FA
1 Bn (8 SP), 4 FA
2 Bn (155 SP), 301 FA (corps unit)
2 Bn (8 SP), 303 FA (corps unit)

Organization for Combat

1-1 FA: DS 1 Bde
1-2 FA: DS 2 Bde
1-3 FA: GSR 1-1 FA
(Do not exceed 30% of CSR in reinforcing 1-1 FA); O/O DS 3 Bde
1-4 FA: R 1-1 FA; O/O R 1-3 FA
2-301 FA: R 1-2 FA
2-303 FA: GS



APPLYING THE FUNDAMENTALS

- 1 ☐ *Provide Maximum Feasible Centralized Control.* This is an offensive situation, so less centralization is desired. Of the six battalions, two are DS, two are R, one is GSR, and one is GS. This is a reasonable control balance.
- 2 ☐ *Provide Adequate Support for Committed Units.* The minimum support of one DS battalion is provided for each committed brigade. The brigade in the main attack also has a reinforcing battalion and second priority fires from a third battalion. The brigade in the supporting attack also has a reinforcing battalion. This organization provides sufficient support to start the battle.
- 3 ☐ *Weight the Main Attack.* Support was weighted so that the 1-1 FA is DS to 1st Bde; 1-4 FA reinforces 1-1 FA; and 1-3 FA is GSR to 1-1 FA. 2-303 FA can be positioned to provide additional weight.
- 4 ☐ *Facilitate Future Operations.* The 1-3 FA is GSR to 1-1 FA rather than reinforcing. It can assume the on-order mission of DS to 3d Brigade quickly. Also, the mission was modified so that enough ammunition is available for the on-order mission. On-order missions were given to 1-3 FA and 1-4 FA to plan the orderly transition to a new situation.
- 5 ☐ *Provide Immediately Available Fire Support so the Commander Can Influence the Action.* The force commander has first priority on fires from the 1-3 FA and 2-303 FA because they are GSR and GS. He has responsive artillery immediately available. These same fundamentals apply to the defense. Chapter 5, *Defense*, illustrates their use in the covering force and main battle area.

In the example case, there was no FA brigade available to augment the fires of the division artillery. When an FA brigade is available, the corps commander will attach it to a division or give it the mission of GSR or reinforcing a division artillery. See appendix B for further discussion.

□ FA in Counterfire

The tactical missions discussed above provide the channels for the FA to conduct counterfire operations, which are the responsibility of the division artillery TOC. On the basis of guidance from the division commander, the division artillery commander may initiate counterfire programs against all or part of the enemy's indirect fire system. When such programs are fired, priority of fire may be to counterfire and a considerable portion of the available FA assets will engage counterfire targets. Brigade commanders may also request the division artillery TOC to initiate counterfire programs. The allocations of FA resources for counterfire programs represent the employment of a sizable amount of the division's combat power and will be an important command decision. Counterfire programs are appropriate under the following situations.

In the Offense

- *As part of a preparation preceding a brigade or division coordinated attack.* The enemy's indirect fire systems are engaged during the first phase of the preparation and, time and ammunition permitting, fire is maintained on these targets throughout the preparation.
- *During the attack when the enemy's indirect fires are preventing mission accomplishment or causing unacceptable damage/casualties.* countersuppression programs should be fired on the enemy's guns.
- *During the consolidation of the objective to prevent the enemy from executing a counterattack.* Counterpreparation fires should be fired. The enemy's fire support systems are included in the first phase of the counterpreparation.
- *For suppression of enemy air defense (SEAD) fires to facilitate friendly air operations.*

In the Defense

- *When an enemy attack is imminent.* Counterpreparation fires and counter-suppression programs should be executed.
- *When the enemy initiates a barrage prior to an attack.* Countersuppression programs should be fired.
- *During an enemy attack when indirect fires are significantly reducing the effectiveness of our direct-fire means.* Countersuppression programs should be fired.
- *For SEAD fires to facilitate friendly air operations.*

By firing suppression and counter-suppression programs, we keep the enemy's guns off our antitank systems and our guns so the FA can continue to support the battle. When the fight at the FEBA gets intense, priority of fires normally will switch to the FEBA. The division commander decides priorities of fire, and the division artillery commander executes counterfire and/or close support fires.

Maneuver and FA units request counterfire through normal fire support/fire direction channels. Other combat support and combat service support units supporting maneuver units request counterfire through the fire support element of the maneuver units. Other support units request counterfire through their command channels.

The request for counterfire is sent to the division artillery TOC. Authorized brevity codes are used, or, if possible, the request is sent by secure voice equipment to prevent the enemy from learning the effectiveness of his fires.

The division artillery TOC immediately responds to the counterfire request with FA fires on the basis of guidance from the division commander concerning priority of fires, ammunition constraints, and survivability of our artillery. Simultane-

ously, the division artillery TOC may also request jamming and close air support, as appropriate.

3-8. Mortars

Mortars are organic to maneuver companies (except tank companies) and battalions. They are high-angle, relatively short-range, area-fire weapons, well suited for maneuver close support. Mortars can provide a heavy volume of responsive, accurate, and sustained fire. They are ideal weapons for attacking targets on reverse slopes or in narrow gullies, ditches, and other areas that are difficult to reach with low-angle fires.

Mortars are especially effective for smoke and illumination missions. They provide excellent initial smoke coverage with WP ammunition because of their high rate of fire. Mortars can provide immediate illumination within the company or task force area.

Commanders should always consider using mortars for smoke and illumination missions.

☐ Mortar Target Acquisition

Mortar targets are acquired by FIST observers or any other personnel who observe the battle. Calls for fire are sent to the mortar FDC.

☐ Mortar Weapons

Mortars are available as shown below.

Mortars are capable of:

- ☐ providing immediate smoke (WP) and illumination,
- ☐ suppressing or destroying area or point targets,
- ☐ providing very rapid rates of fire to build up fire superiority,
- ☐ attacking targets on reverse slopes or in defilade, and
- ☐ providing chemical munitions with 107-mm mortars.

CO UNIT		MORTARS		BN TOTAL
	107-mm	81-mm	60-mm	
Inf Co		3		9
Inf Cbt Spt Co	4			4
Mech Co		3		9
Mech Cbt Spt Co	4			4
Abn Co		3		9
Abn Cbt Spt Co	4			4
AASLT Co		3		9
AASLT Cbt Spt Co		4		4
Armor Co				NA
Armor Cbt Spt Co	4			4
Armd Cav Trp	3			9
Ranger Co			2	6

Mortar fires are most effective against troops in the open, weapon positions with light or no overhead cover, supply and ammunition dumps, and assembly areas.

Mortars are limited by:

- ☐ relatively short range compared to FA,
- ☐ less accuracy in high winds,
- ☐ easier detection by enemy radar due to high angle of fire and long projectile flight time, and
- ☐ ammunition-carrying capability that restricts prolonged periods of heavy firing.

☐ **The Mortar Gunnery Team**

This team consists of observers (FIST), FDCs, and the mortar crews. FMs 23-91 and 23-92 discuss mortar gunnery in detail.

☐ **Mortar Command Control**

Mortars are organic to infantry rifle companies, infantry and armor combat support companies, and armored cavalry platoons.

Their unit commanders exercise command control. Technical fire control is done in the mortar FDC. The FIST observer sends fire requests directly to the mortar FDC, which computes and transmits firing data to the mortar sections.

☐ **Tactical Missions**

Normally, mortar units are assigned a GS mission to support the force as a whole. In rare situations, they may be assigned a DS mission or attached to an element of the force.

With the normal GS mission, mortars are positioned where they best support the main attack (in the offense) or cover the most probable enemy avenue of approach (in the defense). The commander can also weight a supported platoon or company by designating "priority of fires" to that element. The GS mission provides the most flexibility and capability to mass fires.

Occasionally, battalion mortars are assigned a DS mission and provide fires to a designated company of the force. This is most likely when additional FA is available to the battalion and mortar support can be further decentralized. When not firing for its supported unit, a DS mortar element may fire for other force elements.

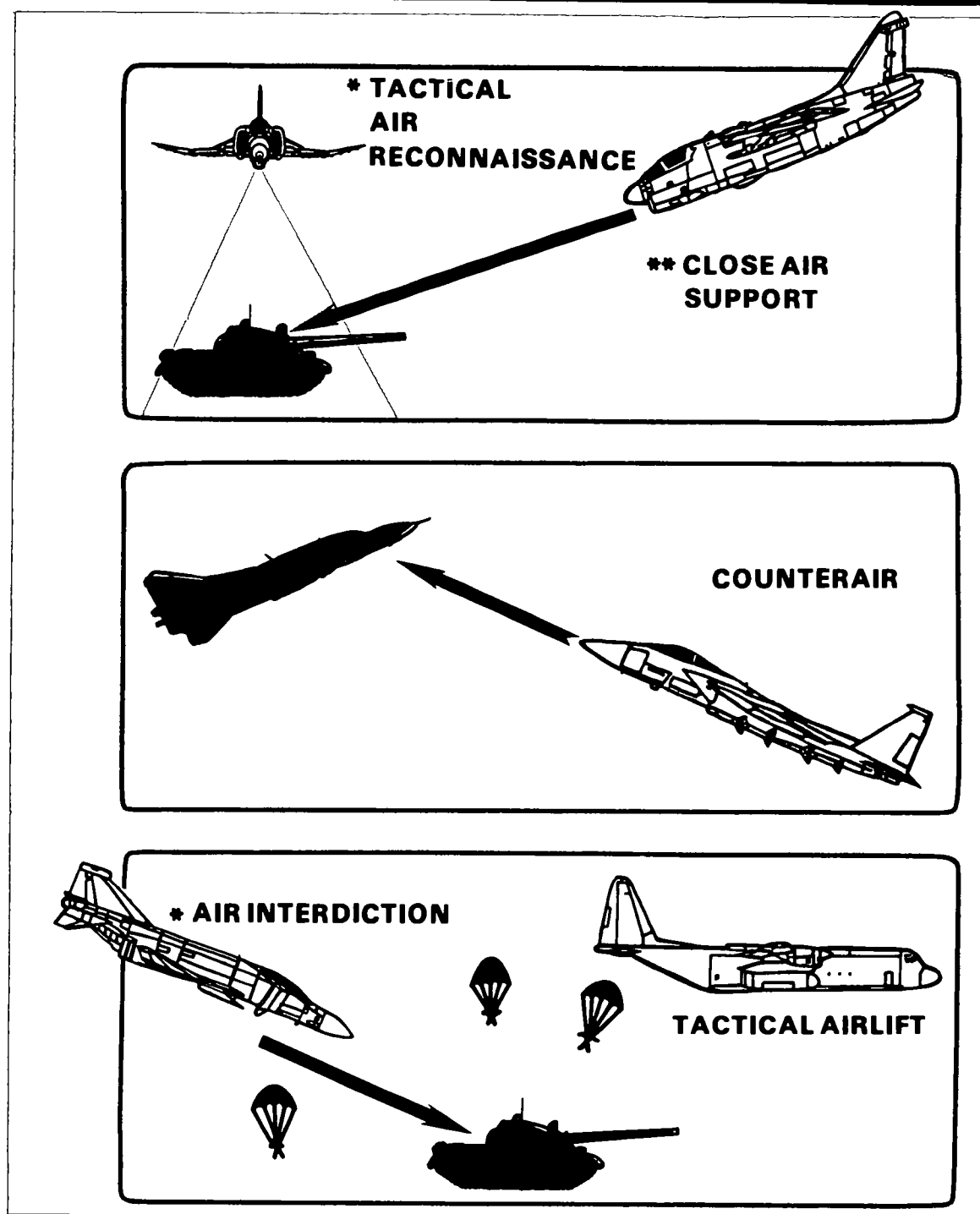
During movement operations, such as airborne or air assaults, the commander may attach the mortars to a subordinate element during the early stages of the assault. The commander to whom the mortars are attached usually assigns the mortars a GS mission. Centralized control is reestablished as soon as possible, and attachment then ceases.

More details on mortars and available mortar ammunition are in appendix C.

3-9. Close Air Support

☐ **Combat Roles of Tactical Air Support**

Tactical air forces provide the US Army support in five major areas (fig 3-8). Of these roles, the FSCOORD has a major interest in two. His *most* important interest is in CAS—"Air action against hostile targets close to friendly forces that require detailed integration of each air mission with the fire and maneuver of these forces." The FSCOORD also has an interest in air interdiction missions. These missions are flown to delay the enemy before he effectively engages friendly forces. Interdiction is accomplished beyond the FSCL where detailed integration of each air mission with the fire and maneuver of friendly forces is not required. Likely targets include enemy follow-on echelon forces that have not yet closed with friendly forces. The goal is to insure efficient attack to destroy or neutralize these forces before they engage friendly elements. Normally, CAS is planned short of the FSCL and air interdiction is planned

FIGURE 3-8. TACTICAL AIR SUPPORT.

*** A portion of this effort is included in offensive air support.**

**** Forms a part of OAS. See annex D for discussion.**

beyond the FSCL. (See appendix D for further discussion.)

☐ CAS Target Acquisition

Forward air controllers and the pilots of attack aircraft are capable of target acquisition as well as control/attack of Army-acquired targets. FSCOORDs and ALOs must work together closely to insure that USAF-acquired targets not suitable for air attack are attacked by other appropriate means.

☐ CAS Weapons and Ammunition

The primary CAS aircraft are the A-7, A-10, and F4. These aircraft deliver various ordnance mixes that will destroy a wide target spectrum. This includes rockets, cluster bomb units (CBU), general purpose (GP) bombs, napalm, guided missiles, 20-mm and 30-mm cannon, precision guided munitions (PGM), and tactical nuclear weapons.

As with other fire support means, CAS has capabilities and limitations.

Capabilities

- ☐ High speed and long range,
- ☐ Versatile weapon/ammunition mixes,
- ☐ Accurate delivery, and
- ☐ Excellent air-ground communications.

Limitations

- ☐ Scarcity of resources,
- ☐ Delivery restrictions caused by limited visibility and weather,
- ☐ Flight restrictions imposed by enemy air defense, and
- ☐ Delayed response and short stay times.

Additional discussion of CAS weapons/ammunition is at appendix D.

☐ The CAS Delivery Team

The team consists of tactical air control parties (TACP), FISTs, FSOs, the direct air support center (DASC), and tactical aircraft. The mechanics of delivering CAS ordnance involves an exchange of technical and tactical information between the pilot, TACP personnel (especially the ground forward air controller or air forward air controller), FIST, FSO, and maneuver personnel. This is a fast-paced operation that insures the pilot has the right target, that he is vectored to avoid heavy air defenses, and that the attack is coordinated with other fire support and maneuver fires to get maximum effect.

☐ CAS Command Control

Command of CAS. Command of CAS is outside the Army chain and is exercised by Air Force, Navy, Marine, or allied air commanders through the tactical air control center (TACC) at the air arm headquarters. Command authority is delegated to DASC—at corps tactical operations centers—which can honor requests for close air support for sorties allocated to the corps by higher Army headquarters.

The tactical air command *allocates* aircraft sorties to support Army operations. The number of sorties allocated is a function of Army priorities; the operational aircraft available; and the requirements for the air war, air interdiction, and CAS. The sorties allocated for CAS are *distributed* to support the corps or divisions whose commanders may further distribute some sorties or retain all sorties under their control. Normally, distribution is dictated by the situation (centralized control for the defense, decentralized for the offense) and the sorties are distributed from higher headquarters. A commander must be careful not to fragment his airpower and lose the effects of massive strikes.

Operationally, it is more effective to use CAS sorties on *preplanned* targets. However,

tactical necessity often demands attacking *immediate*, unforeseen targets. Sorties engaging a target can be diverted to targets with a higher priority.

Control of CAS. The Air Force control CAS through the forward air controller assigned to the maneuver unit. In emergency situations, control could be exercised by the FIST chief.

3-10. Naval Gunfire

NGF support provides a significant fire support capability. It is a long-range, rapid-fire system; and ships can be repositioned to provide support as the battle changes. Advisers representing supporting ships are available at all levels to facilitate NGF support.

☐ NGF Target Acquisition

NGF targets are acquired by maneuver and fire support personnel and their acquisition assets. The naval gunfire spotter team with the battalion task force also acquires targets and calls for and adjusts fires.

☐ NGF Weapons and Ammunition

NGF weapons include 5-inch, 6-inch, and 8-inch guns. (For additional information, see appendix E.)

NGF capabilities are mobility, accuracy, weapon/ammunition variety, high firing rate, high muzzle velocity, and narrow deflection spreads.

NGF limitations are flat trajectory, range dispersion, hydrography limitations, changing gun-target line, Army-Navy communication interface, and vulnerability to enemy air/naval counteraction.

☐ The NGF Gunnery Team

The NGF gunnery team includes spotters, the shipboard gunfire control center, and the firing batteries on gunfire support ships.

NGF gunnery, like CAS, involves technical and procedural considerations that require close coordination with Army fire support and maneuver users.

☐ NGF Command Control

Command of NGF. Command of NGF assets rests with the Navy. The naval commander is assisted by the naval liaison representatives located with supported ground forces.

Control of NGF. The naval commander controls NGF support through his air/naval gunfire liaison company (ANGLICO) representatives with maneuver forces and supporting ships. At each battalion task force, there is a shore fire control party that has a naval gunfire spotter team to direct NGF. The naval gunfire spotter positions himself in a supported company area to direct NGF. A FIST observer can adjust NGF also. However, he must relay commands to the ship through the NGLO at the battalion task force because of incompatible communications.

The Navy fire support group commander assigns tactical missions to NGF support ships according to the division commander's needs. The division commander, advised by his FSCOORD and division NGFO, recommends the best mission to the Navy fire support group commander.

NGF ships are either in DS or GS. Ships with a DS mission fire for specific units, normally a maneuver battalion. Other units can get naval gunfire as directed by the Navy fire support group commander, the division NGFO, or the brigade NGLO.

3-11. The Commander's Other Fire Support Resources

When the commander orders, fire support may also be provided by attack helicopters (AH), selected ADA weapons in a surface-to-surface role, and tanks firing

indirect fire. *Use of these weapons for fire support removes them from their primary mission*, and the commander must carefully weigh that loss against his need for additional fire support. The FSCOORD must be prepared to integrate these weapons into the fire support system when the decision is made.

The FSCOORD has differing degrees of responsibility for planning and coordinating these fires on a mission-by-mission basis. He must fully understand their capabilities and limitations and use them to enhance the combat action and augment the primary fire support means.

☐ **Attack Helicopters**

Attack helicopters are limited by a combination of fuel capacity and flight time, weather and visibility restrictions, and the air defense environment. Their full effectiveness is achieved as an aerial *maneuver* unit—by platoon, by company, and by battalion. Their mobility and capability to maneuver rapidly and mass fires in any type of terrain, regardless of wide battlefield dispersion, make AH an especially capable target attack means. They provide a heavy volume of fire in terrain or a tactical situation that limits effective and economical use of FA, mortars, CAS, and NGF.

Attack helicopter pilots may acquire targets visually. Preferably, targets are acquired and "handed off" to them by aerial scouts, ground or aerial observers, or other target acquisition means. The types of targets for attack should be carefully specified. The AH has a wide variety of ordnance, and knowing the type of target insures that the best ordnance mix is loaded to match the target. A detailed discussion of attack helicopters and available ordnance is in appendix F. The objective of AH employment is to put the aircraft on station at the right time with the right munition. This must be well coordinated, since AH loiter time

is short and the enemy's air defense array is lethal. Scheduled or on-call field artillery fires may be required to suppress enemy air defenses for the attack and to cover their withdrawal after the mission. The movement of AH during attack must be carefully coordinated so FA and other indirect fires can continue.

FIST members can adjust some fires delivered by attack helicopters; however, it is more likely that the AH crew or the unit's aerial scout would conduct the adjustment with guidance from the FIST. Actual delivery of munitions, as with CAS aircraft, is accomplished by the helicopter pilot.

☐ **Air Defense Artillery Weapons**

Two ADA weapons have the capability to engage ground targets. They are the Vulcan gun system and the Nike Hercules missile system.

The Chaparral/Vulcan battalion in infantry, armor, and mechanized infantry divisions has 2 self-propelled Vulcan batteries with 12 weapons in each battery. Towed Vulcan battalions in airborne and air assault divisions have 4 batteries of 12 weapons each. The Vulcan's accuracy, high rate of fire, mobility, and lethality in the direct-fire role make it effective against troops, lightly armored vehicles, and wheeled vehicles. When employing Vulcan in the fire support role, the maneuver force commander must consider the degree of degradation in air defense support he can afford.

Nike Hercules batteries have the capability to deliver long-range nuclear or nonnuclear surface-to-surface fires. Its long range and excellent delivery accuracy make the Nike Hercules an effective weapon for use in destroying enemy air defense missile positions in the enemy rear. The assignment of a surface-to-surface mission eliminates the battery from performing the air defense mission during the surface-to-surface fire mission.

☐ Tanks

The M60A1 tank is a maneuver weapon. However, the commander may decide to use it for indirect-fire support (such as during a deliberate crossing of an unfordable river before bridges are in for all tanks to cross). Tank munitions for indirect fire are high-explosive plastic (HEP) and WP.

A tank has a high rate of fire. However, its ammunition-fuze combinations are limited, and the larger range dispersion makes adjustment times long. Like ADA weapons, tanks used in indirect-fire support are unavailable for their direct-fire mission.

Tanks can fire in the indirect-fire role against "area type" targets of a known range such as chokepoints along avenues of approach, areas around bridges, and assembly areas. These targets facilitate adjustment of fires.

☐ Command Control

The *command* of attack helicopters, ADA weapons, and tanks resides with the unit commander to whom they are organic, assigned, or attached. When attack helicopters, air defense artillery weapons, and tanks are used for indirect fires, both *supporting* and *supported* elements must know the commander's rules for their employment. The FSCoord of the commander assigning the fire support mission insures that the commander's rules are established and known by all concerned. The rules describe what support the system will provide and responsibilities concerning:

- ☐ Priority of fires—Who fires what for whom in priority?
- ☐ Zone of fire—Where do they shoot?
- ☐ Available munitions (types-amounts)—How much is available for this mission?
- ☐ Liaison needs—Where and to whom do officers and NCOs report?
- ☐ Communication needs—What radios and what frequencies are used?

- ☐ Positioning (if appropriate)—Do tanks shoot from present location; if not, who positions?

- ☐ Fire planning—Does the maneuver unit plan or does the FSE or FA FDC plan?

On these rare occasions when AH, ADA, and tanks are used in a fire support role and the unit does not plan its *own* fires, AH fire support fires normally are planned in the FSE while indirect tank and ADA fires are planned in an FA FDC or TOC.

In summary, AH, tank, and ADA units sometimes perform in the fire support role, and the supporting unit FSCoord will have some degree of control. He is responsible that these fires are integrated so they complement and augment the overall fire support scheme. He can do this well only if the rules are specifically spelled out when the unit is placed in the fire support role.

3-12. How to Fit the Fire Support System into the Battle Plan

The commander's battle planning begins when he receives or assumes a mission and continues throughout the execution of the mission. During the dynamic process of evaluating, refining, revising, and deciding how to accomplish his mission, the commander constantly seeks the most efficient and effective application of *all* his resources to generate maximum combat power. The FSCoord, as the commander's special staff officer for fire support, performs a critical role in this planning process. He insures that the commander has all necessary information on available fire support and recommends how best to apply it in concert with his other resources. To get the most from available fire support, the commander includes the FSCoord in every step of his decisionmaking process.

The *commander's estimate* is a method or tool which the commander uses to formulate his plan of action.

This estimate answers the question: "How will I apply my resources to best accomplish my mission?" It produces the "design" of the battle plan.

The example shows how a commander might derive his decision. When more time is available, as in planning for a deliberate attack, this process may be quite methodical and detailed. During the battle, the commander is constantly anticipating, estimating, and evaluating the situation. Under those conditions, the estimate process is less formal, producing rapid, sound decisions on the basis of immediate information and needs.

THE COMMANDER'S ESTIMATE

Commanders use a tool called the *Commander's Estimate* to arrive at their decisions and concepts for their battle plans. While each commander may apply the tool differently, each follows the same general outline.

Analyze the mission.

Gather information and develop course of action.

War-game and compare alternatives.

Make a decision and announce it.

1. *Mission Analysis:* What are the *specified tasks*? Are there any *implied tasks*? Can I restate the mission so that it is clearer?

2. *Action Constraints:* What factors limit or determine the bounds of action? Do I understand them?

3. *Information and Significant Factors:* Gather all known data relating to the mission, then determine what is missing. Develop realistic substitute data based on *predicted* enemy situation where necessary. Then, based on all of the above, derive feasible courses of action.

4. *Compare Alternatives:* War-game each course of action against the enemy situation. Determine which course of action is best, and determine significant/critical factors.

5. *Decision:* Refine the selected course of action in terms of resources and time available. Then announce the decision and intent.

Mission Analysis. Mission analysis begins when the commander receives a mission or deduces a mission from combat dynamics. Mission analysis is *dynamic* and continuous. The commander determines first what must be done—what tasks are *specified* in his mission. Next, he determines an *implied* task required to accomplish his mission.

Mission: From Corps Frag Order

Division attacks 020600Z Jun, secures HWY 7 ridge from LITTLE TOWN to POSSUM CREEK, protects the corps east flank, and prepares to continue the attack to the north. Following units attached at times indicated: 201 Armd Cav Regt, 010600Z Jun; 62 FA Bde, 011400Z Jun. (Refer to sketch map in figure 3-9.)

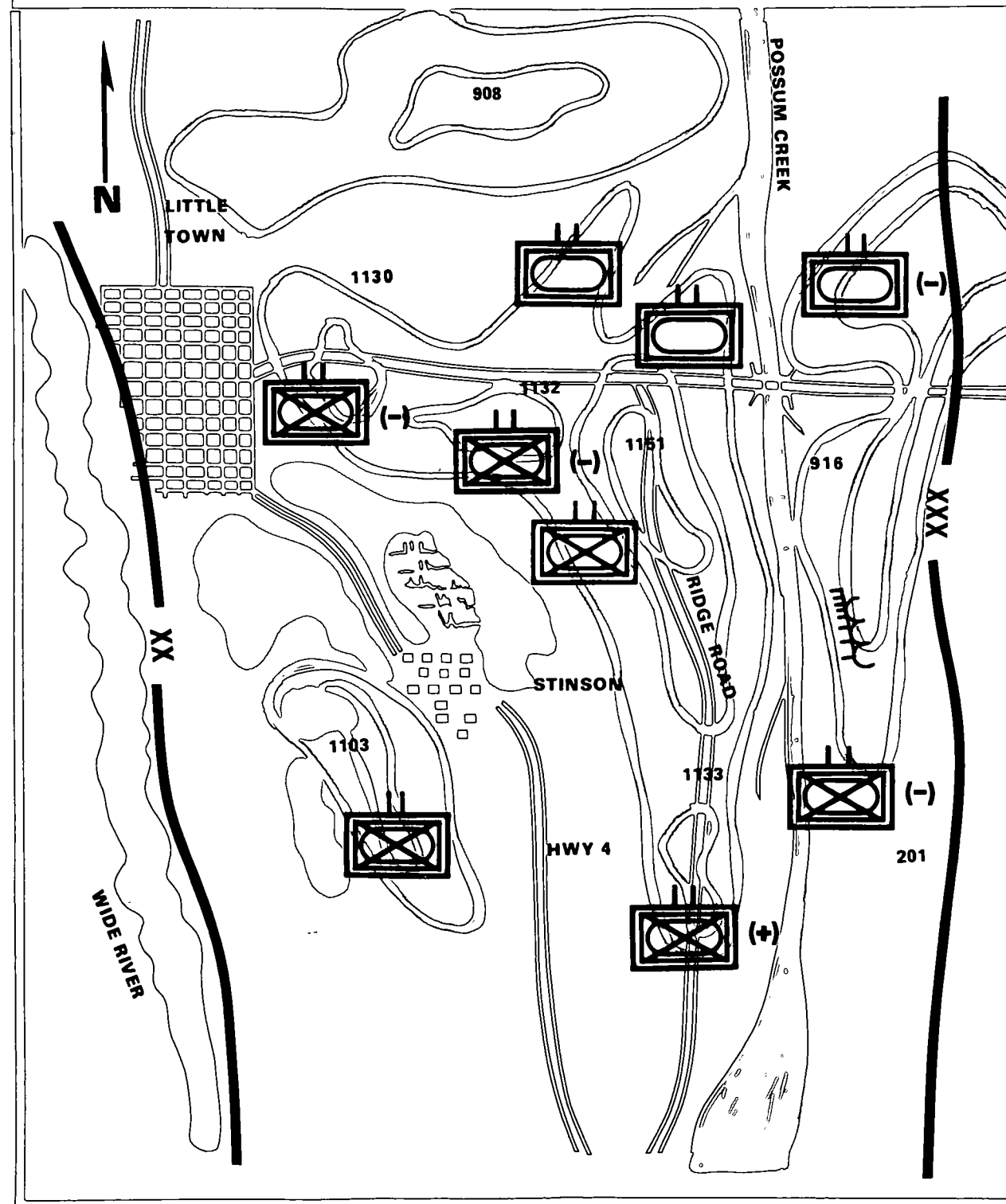
The division commander determines his specified and implied tasks from his mission analysis and applies these tasks to the terrain in his zone. He then restates the mission to insure complete task understanding:

"Division attacks 020600Z Jun to secure the high ground from Hill 1151 to Hill 1132 and Hill 1130, protects the corps east flank, and prepares to continue the attack to the north."

The commander then issues guidance to his staff, including the FSCOORD, to begin the detailed information collection effort to further examine his tasks.

Action Constraints. He identifies considerations that establish bounds of action and a framework for further analysis.

FIGURE 3-9. SKETCH MAP.



"As we mass our forces to break through the enemy's main defensive belt, we must use multiple routes to speed our movement to the breakthrough area. This will reduce our vulnerability to enemy air attack and artillery fires. We must rapidly punch through the main defensive belt. Massed fire support from all means will help us make the hole in the enemy's defenses and keep him suppressed as we strike deep into his rear area to destroy his command control system. It is critical that we get to the high ground from Hill 1151 to Hill 1132 as quickly as possible before he reinforces that area. When we succeed here, his defense will be so badly disrupted that we can easily destroy what is left of his force. The 201 ACR has been protecting the corps east flank, and I would like them to continue in that role. We need to keep movement of division aircraft and vehicles to an absolute minimum. We need a plan that will prevent the enemy from moving reserves to meet our attack while keeping our main effort location concealed as long as possible. I want to avoid getting tangled up in LITTLE TOWN. Make sure that refugees don't interfere with our attack."

**FOLD OUT FOR
PAGE 3-41 WITH FIGURE 3-9.**

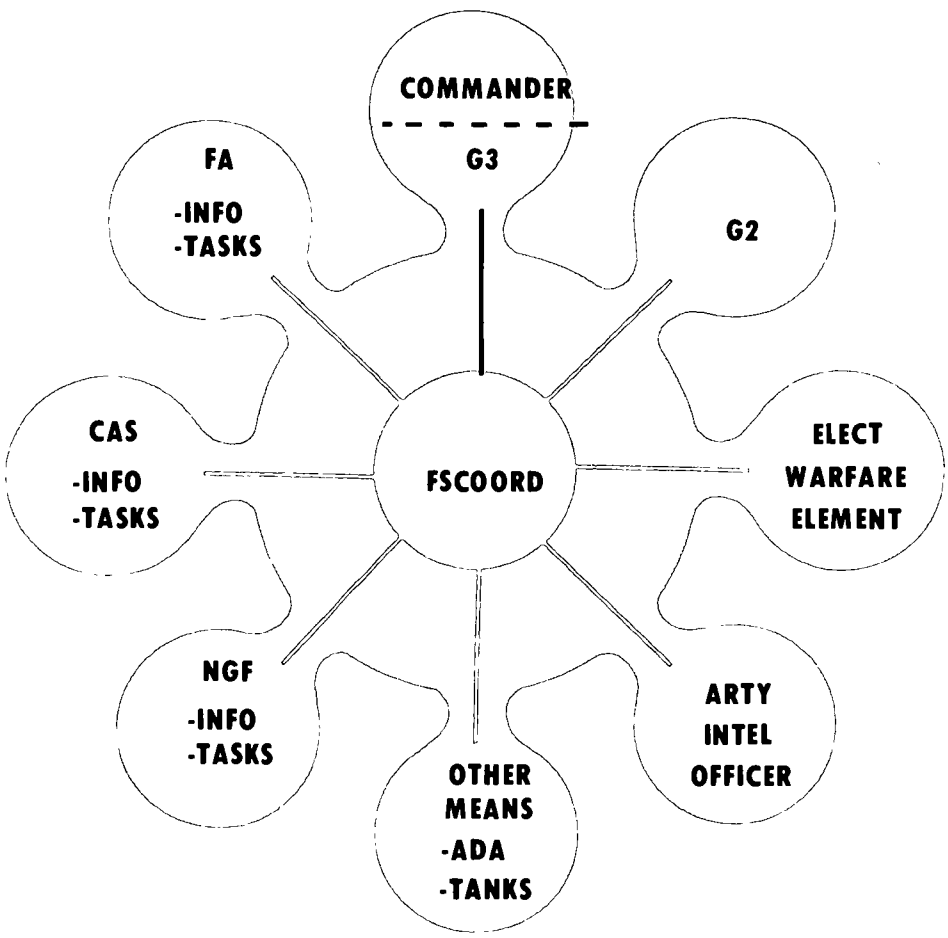
Information and Significant Factors. With this guidance, the FSCOORD and the rest of the staff collect all significant information they can that relates to the mission. They filter it, then present the most important information to the commander. The FSCOORD's primary efforts will be to determine—

□ the status of our fire support assets,

□ asset strength and controlled supply rate,
□ CAS sorties available, and
□ status of enemy fire support in the zone, including strength, location, disposition, target acquisition assets, command control layout, and the most likely method of employment.

The FSCOORD interacts with many agencies to get this information (fig 3-10).

FIGURE 3-10. FSCOORD INTERACTION WITH AGENCIES.



The FSCOORD refines the information he has compiled and the commander uses it—in harsh, objective terms—to see how his forces stack up against the enemy in relative combat power. This includes—

- relative maneuver strength,
- firepower differentials, and
- combat power multiplier effects.

The FSCOORD's input to the commander's analysis is critical: *Combat power differentials are very significant factors determining the tactics of a course of action.*

Compare Alternatives. After comparing the friendly and enemy situations and the relative strengths and weaknesses, the commander develops tactical courses of action—logical, feasible options for getting the job done, courses that maximize his strengths and minimize his weaknesses.

The FSCOORD assists the commander by—

- providing new or refined fire support information,
- insuring that optimum use of fire support is incorporated into each course of action considered, and
- answering questions or providing advice on course of action feasibility from a fire support standpoint.

The commander himself, however, is the focal point for determining the courses of action, the what, when, where, and why of the several options available. Each course of action must accomplish the restated mission and answer the following questions:

- Is the course of action feasible?
- Will it accomplish the mission without undue damage to the command?
- Is it distinguishable from the other courses of action?

In the situation given, the commander developed these courses of action:

□ **Course of Action No 1: Attack 020600Z Jun with the main attack in the direction of Hill 1103-STINSON-HWY 7 ridge supported by massed FA fires and CAS to secure Hills 1130, 1132, and 1151.**

□ **Course of Action No 2: Attack 020600Z Jun with the main attack in the direction of Hill 1133-RIDGE ROAD-HWY 7 ridge supported by massed FA fires and CAS to secure Hills 1151, 1132, and 1130.**

War-Game Courses of Action. Now the commander begins the most important phase of his decision process. He *war-games* each course of action against probable enemy actions to see how the battle will progress. He mentally fights each action up to and including mission accomplishment to determine risks involved and the probable success of each course. Of course, different commanders will have different staff officers present during the war-gaming process. A common solution, however, is for the commander to have himself, the G3, the G2, and the FSCOORD present. It is perhaps during the war-gaming process that the FSCOORD makes his greatest contribution to the planning effort.

As the commander war-games, the *FSCOORD provides the most current information for applying all fire support system elements.* While the commander fights his way through each incident in the war games to determine factors critical to success, the FSCOORD mentally—

- attacks appearing targets with the most effective system;
- foresees the tasks for all fire support system elements;
- considers proper distribution of assets for close support of maneuver elements,

counterfire, and suppression of enemy air defense weapons;

- visualizes fire support unit movement required to follow the battle flow; and
- considers logistical needs and their impact on the battle.

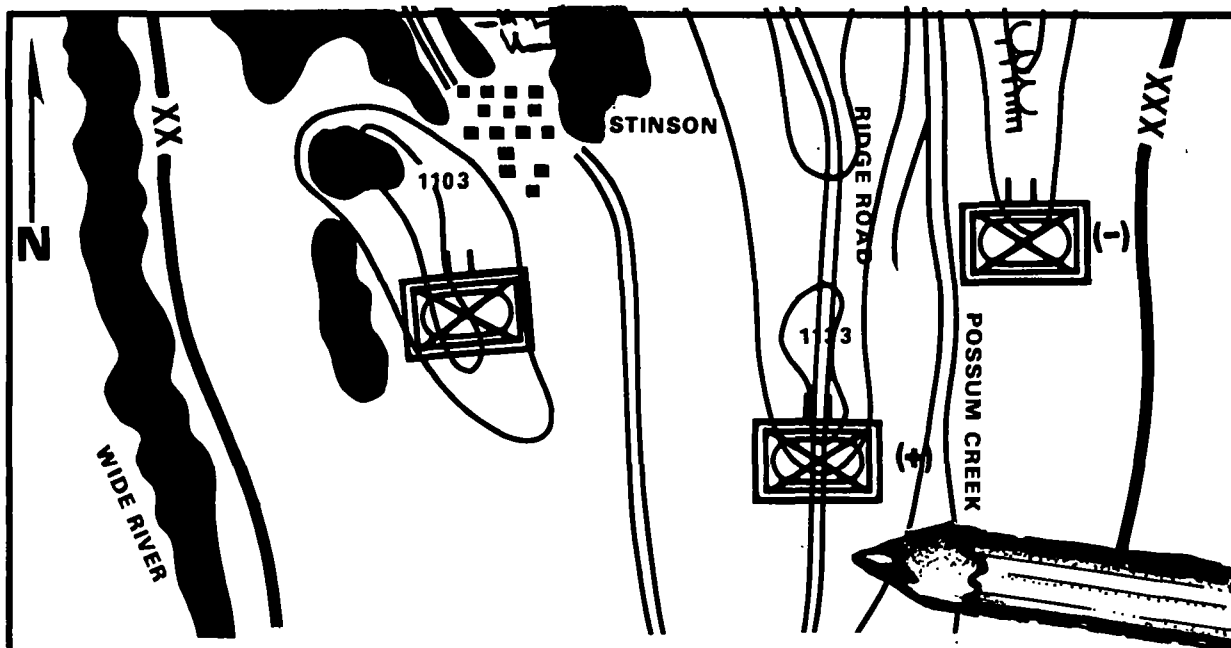
During this process, *critical factors* will emerge that are directly related to fire support. That is why the commander keeps the FSCOORD involved as he war-games and refines his plan.

Example of War Gaming. The example that follows examines a course of action to highlight the main maneuver concerns and emphasize the fire support input to that evaluation. This example will not cover every

detail nor individual that the commander is concerned with, but it will serve to show the critical relationship between the commander and his FSCOORD during the decision-making process.

War-Gaming a Course of Action
(Refer to sketch map, fig 3-9.)

- **Course of Action No 2: Attack 020600Z Jun with the main attack in the direction of Hill 1133-RIDGE ROAD-HWY 7 ridge supported by massed FA fires and CAS to destroy enemy forces and secure Hills 1151, 1132, and 1130.**



CDR: "The main effort initially encounters a reinforced motorized rifle battalion south of Hill 1133 in hasty defensive positions. We can reduce enemy combat power by firing an artillery and mortar preparation on these forces and on the adjacent enemy battalion to the west. John

(FSCOORD), can we screen movement into this area? The terrain doesn't provide good masked, concealed routes there and we'll be vulnerable when we move in that area."

FSCOORD: "Wind conditions are favorable, so we can smoke the area with

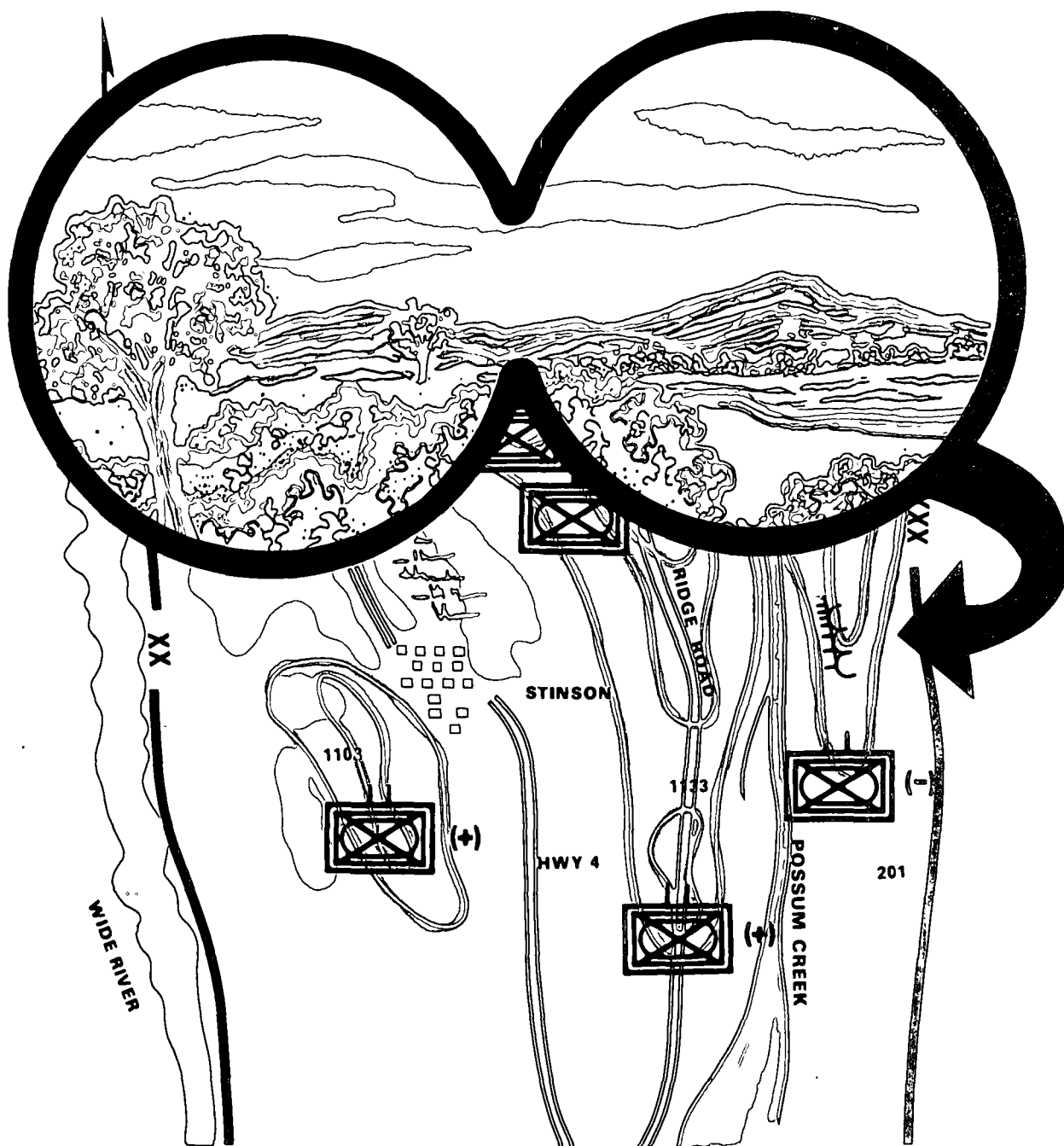
both HC and WP; but we have to be selective in this effort. We don't want to expend all our smoke ammo here. We'll need more as we move beyond the main defensive belt. I'll refine targets for obscuration at the penetration with the G2."

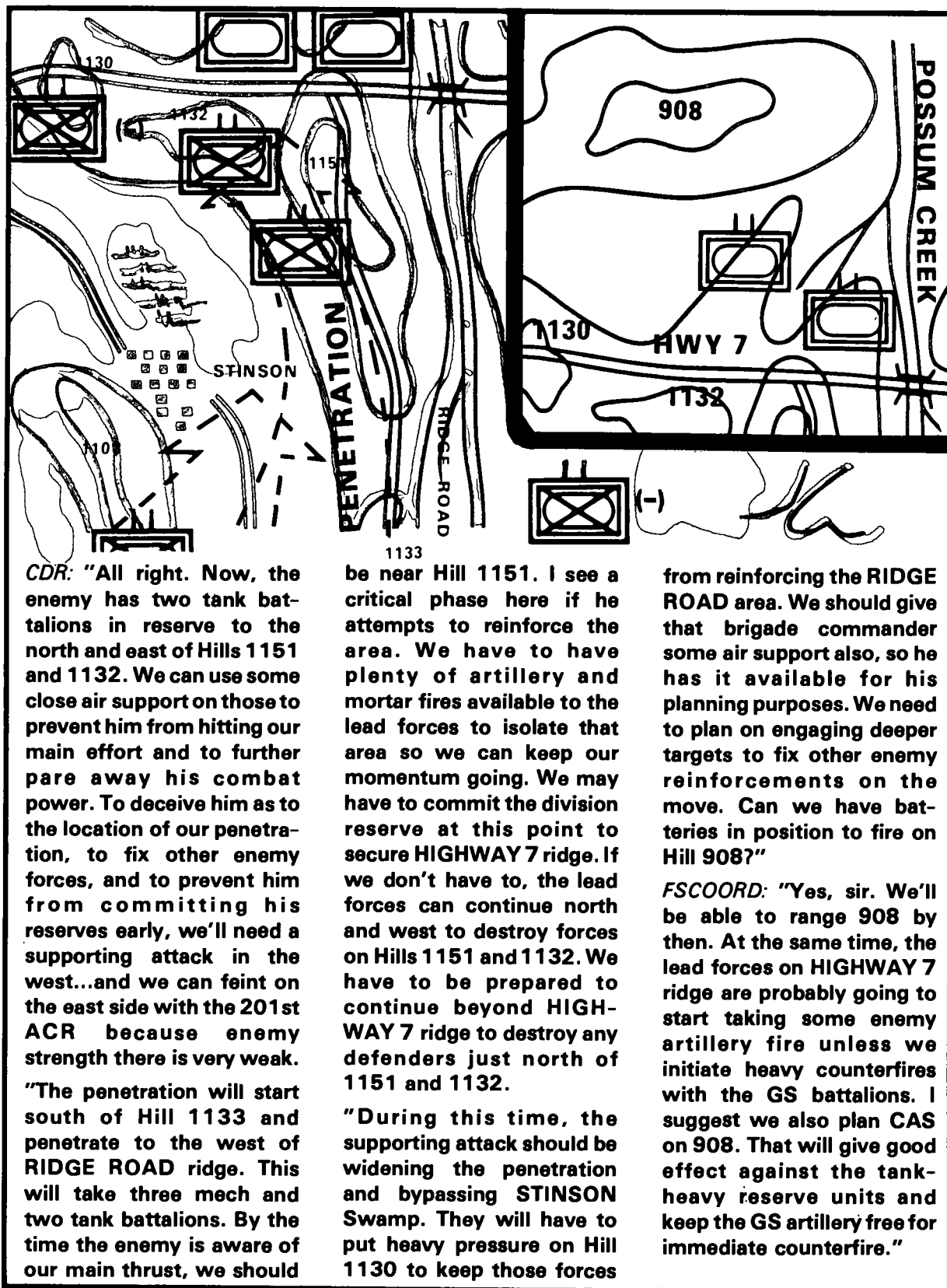
CDR: "Good. We need to suppress that battalion and the one to the west so our maneuver forces can move rapidly through the main defensive belt. After we get through it, we'll pass in the

vicinity of some deep caves on the slope of Hill 916 that provide excellent protection to the defender. What can we use to neutralize them?"

FSCoord: "Sir, the ALO says that we have 30 CAS

sorties allocated, so we'll be able to put some air on the forward slopes. We will still need to plan artillery and mortar fire to suppress the area as we bypass it, however."





**THROUGHOUT THE WAR GAMING
PROCESS, THE COMMANDER AND
FSCOORD INTERACT CLOSELY TO
DETERMINE ALL MANEUVER AND FIRE
SUPPORT FACTORS THAT ARE
CRITICAL TO ACCOMPLISHMENT
OF THE MISSION.**

The mission of the division's fire support system is contained in the commander's concept. Nothing stated should have surprised the FSCOORD, since he has already developed appreciation for how best to use fire support during the operation from the war gaming. Although he has been briefing and consulting with his various fire support agency representatives (NGF, CAS) throughout the estimate and decision process, the FSCOORD now focuses his attention on them. They will have much to do.

□ FSCOORD's Actions

The FSCOORD must now accomplish three very important tasks. He must recommend the best way to—

- match the division's fire support assets to the tasks deduced from the war gaming,
- insure that each subordinate unit has enough fire support allocated to accomplish its mission, and
- insure flexibility in the fire support system to meet the unexpected.

Meeting with other fire support representatives (CAS, NGF), the FSCOORD quickly reviews the commander's battle plan and critical fire support tasks. The division-level fire support tasks are distributed to the agency most effective in dealing with them, and suballocation of assets is studied. Each agency provides input to the division fire support plan—with guidance that the input be limited to those things the *maneuver commander* needs to know (What are FA, CAS, and NGF going to do in the operation?). The input is received and approved by the FSCOORD, who incorporates it into the division fire support plan.

The information is then assembled and prepared as the FA, NGF, and CAS support plans described earlier. They tell executing agencies what targets to attack, when, and with what munitions. At division level, the FA support plan is written at the division artillery TOC—the other two are written at

the division main FSE by the NGFO and the asst G3 for close air support, respectively. These plans are distributed to the executing units, and a copy is furnished to the FSCOORD.

Since the planning system is a dynamic process, plans will be constantly changed and updated. New targets will be acquired, enemy units will move, and the friendly situation will change. The FSCOORD will continue to supervise the planning and coordinating effort until the operation is complete.

3-13. Standardization Agreements

Two of the principal communities in which US forces are involved with standardization agreements are the ABCA quadripartite community and the NATO alliance. Agreements within the ABCA community are known as quadripartite standardization agreements, or QSTAGs. NATO standardization agreements are found in STANAGs.

Standardization agreements for field artillery and fire support operations establish

procedures and guidelines for the use and coordination of all arms (multinational) in land combat operations.

The immediate goal of these agreements is the interoperability of equipment and procedures to allow multinational forces to operate smoothly and effectively during combat.

An important consideration is that there will be differences between the various forces other than variations in language. These may include variations in doctrine, organization, training, logistics, food, and customs. Commanders must recognize these and take them into account during planning.

3-14. Summary

This chapter has discussed the organization and operation of the total fire support system and has focused upon the integration of combat power by the maneuver commander and the FSCOORD. In the next chapter, *Offense*, the principles outlined in this chapter will be applied in the planning and conduct of the offensive.





Offense

***To move swiftly, strike vigorously, and
secure all the fruits of victory is the
secret of successful war.***

— Stonewall Jackson, 1824-1863

WHY

- The ultimate outcome of any combat is determined by offensive operations. To be successful, the attacker must concentrate superior combat power at the decisive time and place. Firepower is a key ingredient of that combat power.

WHAT

- This chapter tells you:
 - the purposes, concept, and fundamentals of the offense;
 - considerations for offensive fire support;
 - types of offensive operations and fires; and
 - how to support a movement to contact, a hasty attack, a deliberate attack, an exploitation, and a pursuit.

4-1. Primary Purpose of the Offense

The primary purpose of offensive operations is to destroy the enemy by breaking through his defensive system and driving rapidly and violently into his rear to destroy artillery, air defenses, command posts, logistic support, and command control systems. FMs 71-100 and 100-5 describe fully the purposes, fundamentals, and types of offense. This information will be summarized here along with the fire support system imperatives derived from them. Other purposes of the offense are shown in figure 4-1.

FIGURE 4-1. OTHER PURPOSES OF THE OFFENSE.

- *Secure Key Terrain*
- *Gain Information on Enemy Strength and Dispositions*
- *Deceive the Enemy*

4-2. Concept of the Offense

Since the enemy cannot be equally strong everywhere, it is usually possible to concentrate sufficient combat power to

outweigh him at a place of the attacker's choosing. The attacker has one major advantage: he has the initiative—he chooses when and where he will concentrate maneuver forces and massive fire support to surprise and destroy the enemy. Concentrated attacks delivered in rapid succession help gain and maintain momentum, thereby increasing pressure on enemy command control and personnel. Often, it is necessary and desirable to be in a defensive posture, but the outcome of battle is ultimately determined by offensive operations. In the offense, the commander will:

- ☐ find a weak spot or create one;
- ☐ maneuver to the weakness with speed and stealth;
- ☐ penetrate or envelop the enemy—move rapidly, bypassing resistance where possible, to reach terrain that makes enemy defensive positions untenable; and
- ☐ prepare to exploit the penetration; continue the attack to destroy HQ, artillery, other combat support, and combat service support; repulse a counterattack; or widen the penetration.

4-3. Fundamentals of the Offense

The fire support system fights with the same fundamentals as maneuver forces. Just as the force commander applies the following fundamentals, his FSCOORD tailors the fire support system and all its assets to assist:

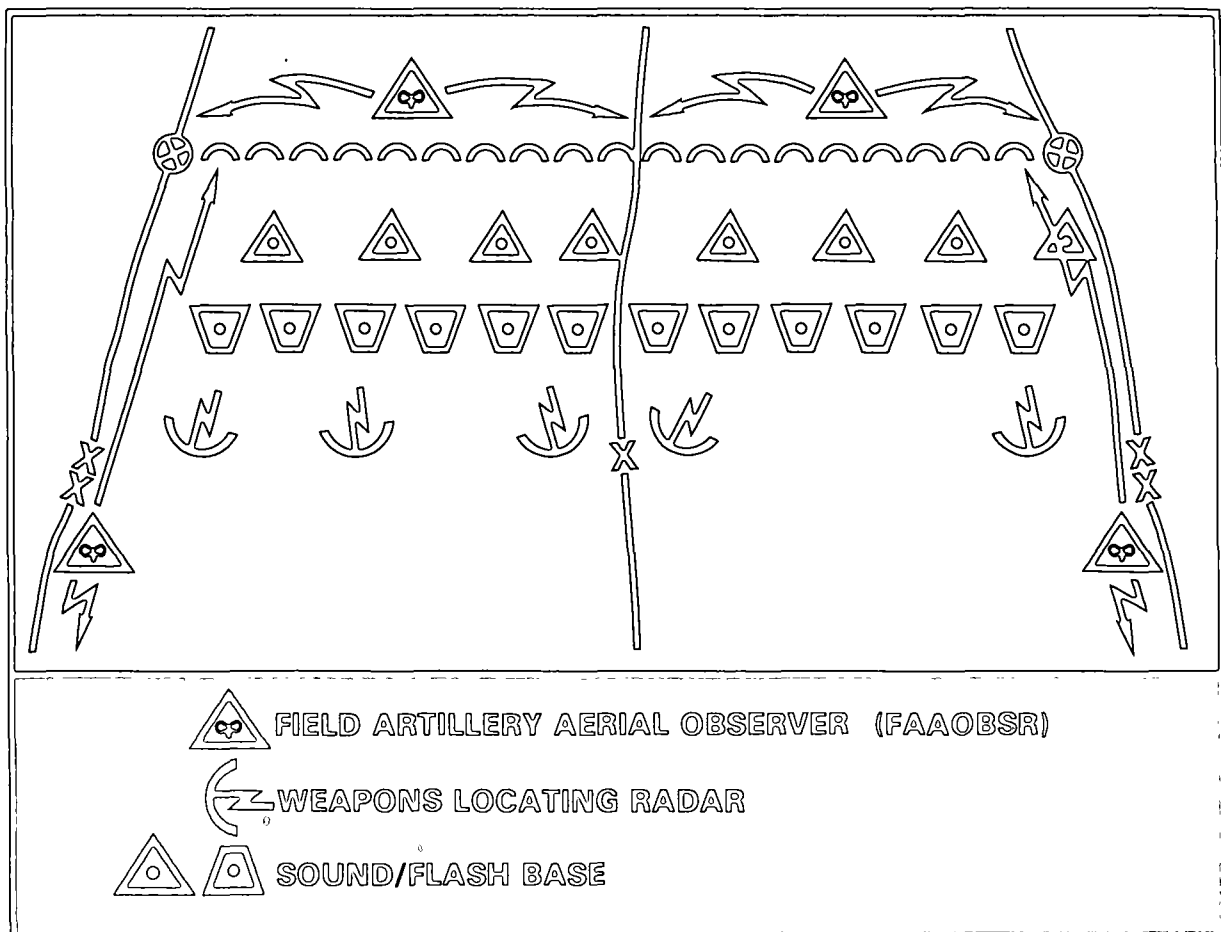
- 1 See the battlefield.**
- 2 Concentrate overwhelming combat power.**
- 3 Suppress enemy defensive fires.**
- 4 Shock, overwhelm, and destroy the enemy.**
- 5 Attack the enemy rear.**
- 6 Provide continuous mobile support.**

1 See the Battlefield

A defender cannot be strong everywhere. To be successful, the attacker must know where the enemy is vulnerable. The commander uses intelligence sources and coordinates intelligence operations to determine the enemy's strengths and unit locations, capabilities of his weapons, and the condition of his troops. The FSCoord maintains a constant awareness of the intelligence picture, insuring that all intelligence sources are aware of fire support combat information requirements. In the

offense, he focuses attention on the battlefield in the same way the maneuver commander does—in search of vulnerabilities and weak areas—so that fire support efforts complement the scheme of offensive maneuver. Additionally, the FSCoord helps the commander "see the battlefield" by insuring that target acquisition assets are effectively used and that the results are quickly and accurately interpreted for target information. Any information of value to other agencies is quickly dispatched to them (fig 4-2).

FIGURE 4-2. DIVISION ARTILLERY TARGET ACQUISITION ASSETS.



2 Concentrate Overwhelming Combat Power

Success in an attack depends on the commander's ability to concentrate on a narrow front at a site where the enemy is weak. The attacker must thin out his forces elsewhere in order to assemble adequate combat power to break through or around the enemy's defenses. He makes careful use of terrain, reduced visibility, and other means to deceive the defender as to the location, time, direction, and strength of the attack. He capitalizes on the mobility of his forces and the flexibility of aviation, field artillery, and tactical airpower to mass rapidly and achieve surprise.

The FSCOORD makes a critical contribution to the concentration of combat power. He recommends allocation and positioning of FA and the allocation of other fire support assets that facilitate the massing of firepower at the critical time and place to protect advancing tank and mechanized infantry forces. He exploits the range capability of FA weapons to achieve massing and shifting of fires instead of shifting units. FA is positioned forward in the offense and is prepared to move farther forward once the attack gains momentum. He monitors ammunition expenditures to insure that supplies are adequate and plans deceptive measures that make sparsely supported areas appear to be strongly supported.

3 Suppress Enemy Defensive Fires

Concentrated attack forces are vulnerable to enemy fire. Accordingly, the attacker must make suppressive strikes of such intensity and duration as to substantially degrade the effectiveness of enemy weapons in the critical area. Air defense suppression is a prerequisite to air operations. Suppression of enemy indirect-fire weapons—by air attack or counterfires—is essential to avoid high losses. Suppression of ATGM and tank gunners is essential to the success of maneuver forces. *The FSCOORD's job is to*

coordinate indirect-fire suppression with direct-fire suppression and maneuver of forces. Suppression of direct-fire weapons is planned at battalion TF and company team level. Smoke and HE suppressive fires are delivered by mortars and FA. Indirect-fire weapons are attacked by counterfire planned at division artillery and executed by FA and CAS. Suppression of enemy air defense (SEAD) fires normally are planned at corps and division levels. Normally, the corps commander implements this by fire support means.

4 Shock, Overwhelm, and Destroy the Enemy

The success of the attack depends upon the combined effects of speed, surprise, and violence. The advance of maneuver forces is timed to coincide with intensive suppressive fires, supporting attacks, close air support, electronic warfare, and other operations. Once the initial attack hits the enemy, there must be no letup. The attacker must penetrate, bypass points of resistance, and strike deep. The FSCOORD plans and orchestrates fire support. Available mortars, FA, CAS, and naval gunfire *mass their fires* to attain maximum devastation.

5 Attack the Enemy Rear

Decisive results are most quickly gained through widespread destruction or capture of enemy command, control, and support elements. Once the attack has burst through initial enemy defenses, the attacker must drive relentlessly into the enemy rear area. Here less well defended enemy command control centers and combat support and combat service support installations are attacked to immobilize the enemy defense. The FSCOORD plans and coordinates fire support to disrupt and destroy enemy command control, artillery, and air defense sites. He also masses fire support to interdict the flow of enemy reinforcements and cut off the movement of supplies for the enemy defense.

6 Provide Continuous Mobile Support

Continuous mobile support is necessary for tank and mechanized forces to advance. Supporting land elements must plan moves that keep pace with supported maneuver forces. In the planning of fire support, the FSCOORD thinks through each step of the offensive operation and determines fire support requirements for each. He insures that support from indirect-fire weapons is adequate and constant. He makes provisions to have interim weapons in place while primary support systems are displacing. Air assets may fill the void left when surface weapon systems are moving. He programs ammunition expenditures on the basis of resupply capabilities, insures that routes for FA movement are adequate, and plans for fire support communications. Imaginative planning, vigorous execution, and flexibility of response characterize the teamwork required for successful offensive operations. The deeper the supported force advances, the more difficult it becomes to continue the fire support and to keep lines of communications open.

4-4. How to Support the Offense

The commander of a maneuver force on the offensive should expect the fire support system to do these things:

Support the *movement to contact or meeting engagement* by—

- ☐ providing immediately responsive fires to leading company teams,
- ☐ suppressing enemy positions with smoke and HE-VT,
- ☐ attacking deep targets with massed fires and CAS,
- ☐ suppressing enemy air defense and indirect-fire positions,
- ☐ screening friendly maneuver units with smoke, and

- ☐ planning for hasty attack contingencies.

Soften enemy defenses *before the attack* by prearranging short, violent *preparations* targeted against:

- ☐ frontline defenses,
- ☐ OPs,
- ☐ command control facilities,
- ☐ indirect-fire weapons, and
- ☐ reserves.

For maximum effect, fires are lifted at the *last possible moment*. For more details, see appendix H.

Provide support *during the attack* to—

- ☐ neutralize or suppress hostile forces, weapons, observation, or electronic jammers that could impede the attack;
- ☐ suppress the enemy on the objective, obscure his vision, screen friendly movement;
- ☐ neutralize resistance during the final assault; and
- ☐ isolate the objective with fires beyond and to the flanks.

Plans fires *during consolidation* to—

- ☐ protect reorganizing troops;
- ☐ break up counterattacks; and
- ☐ prevent enemy reinforcement, disengagement, or resupply.

Plan *counterfires throughout* all offensive operations to suppress, neutralize, or destroy indirect-fire weapons.

The following considerations form the basis for planning and coordinating fire support for offensive operations.

☐ Decentralize Control of Fire Support

The attacker has the initiative and can concentrate maneuver forces and firepower at the time and place of his choosing. Because the offensive situation is less vague than the defense, the commander decentralizes control of fire support to insure that immediately responsive fires are available to maneuver units.

To decentralize:

AT DIVISION



- ☐ distribute CAS sorties to leading/attacking brigades,
- ☐ hold less FA in general support,
- ☐ assign reinforcing (R) rather than GSR missions,
- ☐ place NGF ships in general support of brigades or in direct support of battalion task forces;

AT BRIGADE



- ☐ distribute more CAS sorties to leading battalion task forces,
- ☐ dedicate artillery batteries to leading company teams in the *movement to contact*;

AT BATTALION TASK FORCE



- ☐ use battalion mortars in direct support of leading company teams, and
- ☐ give priority of fire support to leading company teams.

☐ Weight the Main Attack

In the offense, the commander concentrates combat power at a point where the enemy is weak or can be weakened. The FSCoord assists the commander in concentrating firepower at the critical time and place. Fire support assets are thinned out in less critical areas so that the maximum shock, suppressive, and destructive effect is provided to the main effort. More fire support is allocated to the main attack and positioned to support it. More ammunition and CAS sorties may be allocated to weight the main attack.

☐ Acquire and Attack Deep Targets

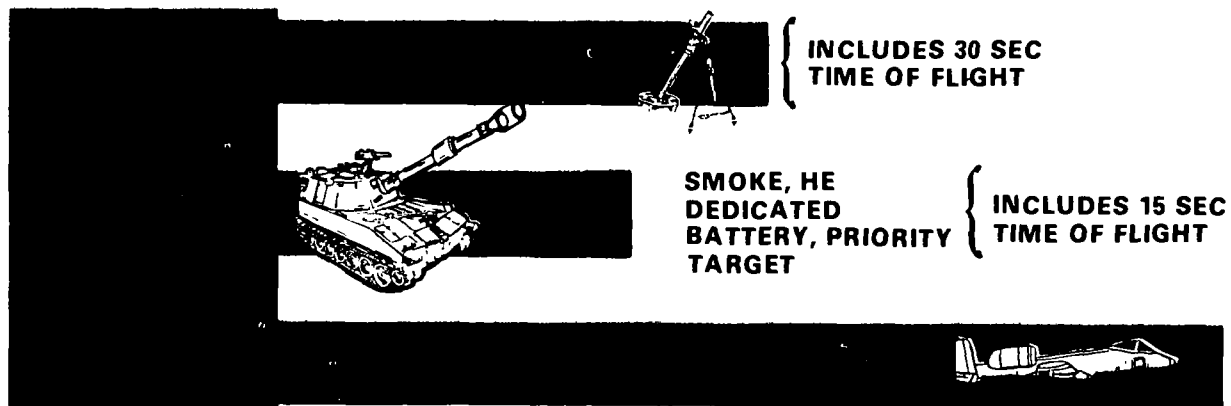
Decentralization of fire support assets facilitates fires that are immediately responsive to committed maneuver elements.

However, targets beyond the acquisition capability of the attacking force may also pose a significant threat to the success of the offensive effort. Enemy jammers require special attention to prevent their interference with command control of friendly operations. Long-range target acquisition devices and intelligence efforts must be focused on such threats. The commander and the FSCoord establish priorities for the attack of these and other targets, and the FSCoord insures that GS field artillery, naval gunfire, or CAS assets are available to attack them.

4-5. Types of Offensive Operations

- 1 Movement to Contact
- 2 Meeting Engagement
- 3 Hasty Attack
- 4 Deliberate Attack
- 5 Exploitation
- 6 Pursuit

Often, offensive maneuver is discussed within the framework of the types of offensive operations. However, a force may be conducting one type of operation while one of its subelements is conducting another. For example, division may be moving to contact while a lead battalion task force is conducting a hasty attack, or the division may be exploiting while a battalion task force is moving to contact. In the offense, a force finds or creates a weak point, maneuvers to the weakness, penetrates or envelops defenses, rapidly moves deep into the enemy's rear making his prepared positions untenable. The FSCoord approaches planning for the offense as if it were a continuum—for example, plans for a movement to contact and a meeting engagement include contingencies of hasty attack, bypass, or hasty defense; plans for the deliberate attack include provisions for support of the exploitation and pursuit.

FIGURE 4-3. FIRE SUPPORT REACTION TIMES AT CONTACT

1 Movement to Contact

The purpose of a movement to contact is to gain or regain contact with the enemy and to do it in a way that risks the smallest part of the force while the remainder is available to immediately respond when contact is made. The force moves aggressively toward the enemy but is unsure of exactly where or when it will fight. The force moves with the smallest practicable element forward—a reinforced battalion-sized force could lead a division or a company, or a cavalry troop could lead a brigade. The forward element moves along concealed routes covered by another "overwatch" element positioned to facilitate support by fire. The commander decentralizes control to leaders to the front and flanks but retains the bulk of his combat power to permit flexible response upon contact. The FSCOORD's recommendations must *poise the fire support system for immediate response upon contact. The most pressing requirement is for fast suppressive fire* (fig 4-3).

2 Meeting Engagement

A meeting engagement occurs when a moving force makes contact with a moving or stationary enemy force about which it has little or no information. *The action ceases to*

be a meeting engagement when the situation has been developed and other actions are undertaken, such as bypass the resistance, conduct a hasty attack, conduct a deliberate attack, or defend.

The primary goal, once contact is made, is to gain the upper hand by overcoming the enemy before he can effectively react. To do this, the commander must have his force in a good posture at the time of contact; must have good information as to the situation, either through reports or personal observation; and must immediately issue instructions for action.

If the enemy force is also moving, which is frequently the case in the exploitation, in the counterattack, and even in defense, speed in both decision and execution is most important.

FSCOORDs must understand the urgency of this situation. While the maneuver commander determines the best course of action, the FSCOORD coordinates fires to augment those of the overwatch and at the same time prepares to support the chosen course of action. If the enemy force is bypassed, the FSCOORD coordinates with the commander and suppresses the bypassed force until his unit is safely past.

3 Hasty Attack

The hasty attack is conducted to maintain forward momentum against light resistance. If resistance is heavy, a hasty attack may be conducted to further develop the situation. Speed is essential—if momentum is lost, the hasty attack will fail. The commander deploys his forces rapidly using cover provided by terrain and supporting direct and indirect fires. As maneuver elements move from bounding overwatch into the attack, fire support from mortars, FA, and CAS are massed in support. These fires must be closely coordinated—held on enemy positions until the last possible moment—so they *add* to the momentum of the attack. The FSCoord also plans fires on enemy mutual support positions, flank approaches, and likely routes of enemy reinforcement.

4 Deliberate Attack

When a commander determines that he has encountered a strong enemy force in well-prepared positions, he conducts a deliberate attack. A deliberate attack aims at a penetration on a narrow front or an envelopment around an assailable flank, seeking to move deep into the enemy's rear. It is characterized by more detailed knowledge of enemy positions, deliberate planning, and greater volumes of supporting fires. The FSCoord has more time to use intelligence sources, adjust ammunition stocks, and make contingency plans. Massed fires are targeted to support the commander in his attempt to *make a hole* in the enemy's defense. Fires are also planned to suppress forces on the shoulder of the penetration, fix enemy forces away from the penetration, and prevent reinforcement by second echelon forces.

☐ Exploitation and Pursuit

Exploitation and pursuit are key phases to success in mounted offensive combat. The main objective of this combat is to destroy the enemy's armed forces. Commanders must

exploit success as the opportunities present themselves. Breakthrough may be achieved gradually or abruptly. Enemy defenses often consist of belts, echelons, and lines of positions. When the enemy is having difficulty maintaining the defense, exploitation and pursuit are ordered. Indicators that the enemy is in trouble include:

- ☐ A general decrease of resistance.
- ☐ An increase in the number of prisoners taken.
- ☐ Friendly forces overrunning enemy positions.

5 Exploitation. The purpose of this phase is to prevent the enemy from reconstituting an organized defense or from conducting an orderly withdrawal. This is done by a rapid advance toward the enemy rear area, bypassing small pockets of resistance, and by destroying lightly defended and undefended facilities. Exploitation forces are large, reasonably self-sufficient, and well supported by fire support and air means. Normally, stationary forces support the exploiting force until it is out of range. The changeover in fire support responsibilities must be well planned to insure that the exploiting force is well supported. Plans for supporting indirect-fire units must include those for ammunition and POL resupply. Fire support mobility should equal or exceed that of the supported force.

6 Pursuit. The purpose of the pursuit phase is to complete the destruction of the defender. In this phase, the attacker focuses on the major enemy force. Terrain objectives may be assigned to orient pursuing forces. They are usually deep objectives. This phase normally will require the use of both direct pressure and encircling forces. Fire support normally is decentralized. Resupply of fire support units is a major concern. Special coordination may be needed to insure that the fires of both the direct pressure and encircling forces are in concert.

4-6. How to Support the Movement to Contact

☐ Deployment of Forces

A force moving to contact deploys so that initial enemy contact is made by as small a friendly element as possible. In this manner, the commander retains the bulk of his combat power so he can swiftly maneuver and destroy or bypass enemy elements contacted and maintain momentum of the advance. The movement to contact is characterized by decentralized control and extremely responsive fire support to compensate for the relatively small amount of maneuver power forward.

A large force, such as a division, may be a considerable distance away from the enemy, and knowledge of the environment and his strengths and dispositions may be vague. In this case, the division probably will use a covering force and advance, flank, and rear guards to provide for the rapid and uninterrupted advance of the division and for adequate security. If these forces are out of range of fire support in the main body, field artillery and additional mortars may be attached to the force to insure that they are provided adequate fire support. Close air support priorities normally would be given to these forces as well.

If there is less distance between the main body and the enemy, yet the details of his dispositions are unknown, the division normally moves to contact with brigade elements on multiple routes. In this case, major fire support assets may stay with the main body, echeloning forward as required, to insure adequate support of leading elements.

When any force makes contact, the most important concern is to gain the upper hand quickly, generate fire superiority immediately, and destroy forces that could interfere with the mission or bypass those that cannot. To accomplish this, the force must be in a good posture to concentrate

combat power, especially fire support,
quickly.

At the lower levels; e.g., company team and battalion/task force or cavalry squadron, units take immediate action on contact to return fire (both direct and indirect), deploy, report the contact, and develop the situation. Fire support must be tailored to respond quickly and accurately to complement direct-fire suppression, build up fire superiority, and provide the force freedom to maneuver.

☐ **How to Support a Division Moving To Contact**

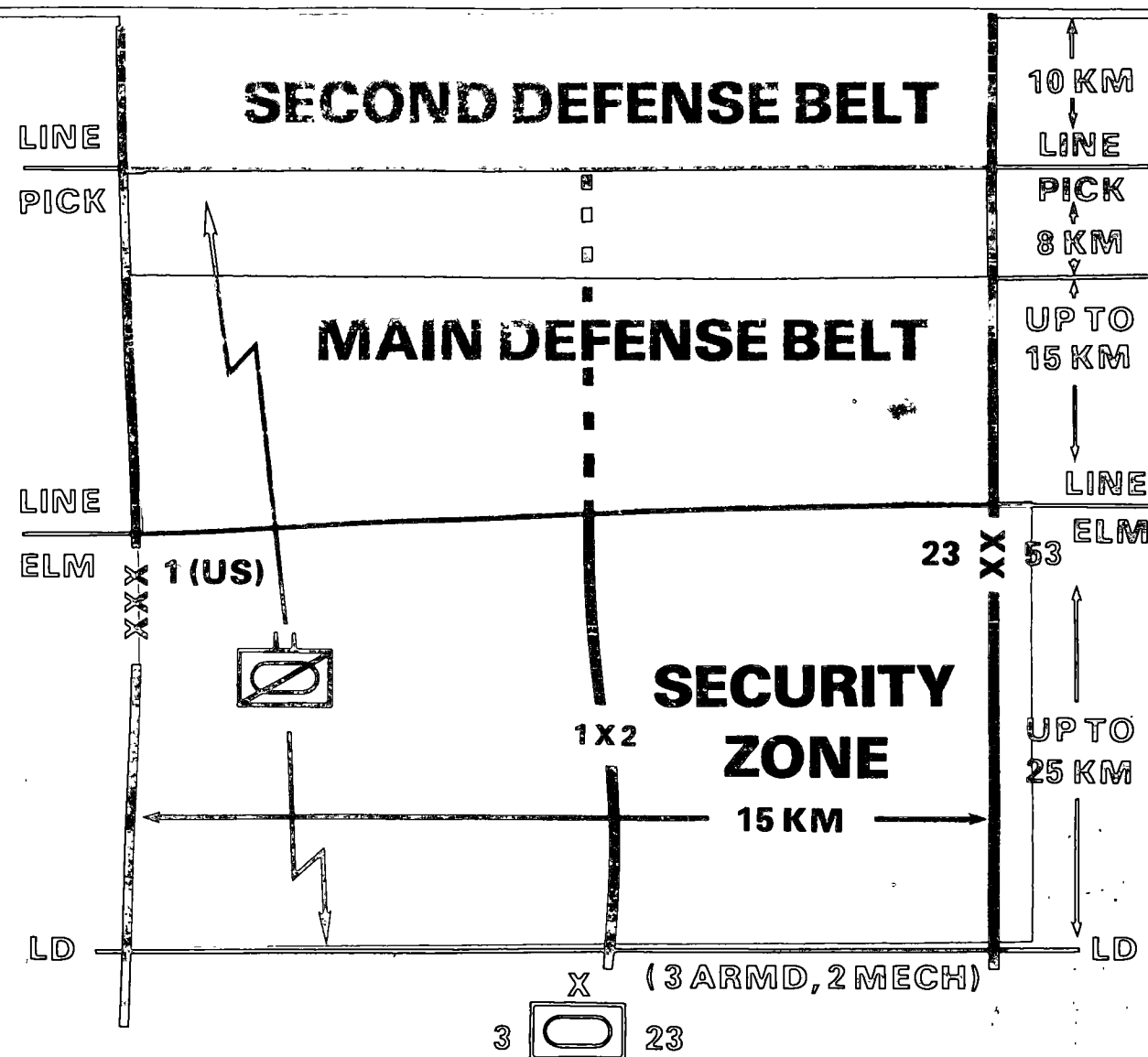
The 23d (US) Armored Division, as a part of the I (US) Corps offensive, has received the mission to attack to penetrate a line deep in the enemy rear. The 53d Mechanized Division will attack on the right toward a similar line. As the forward divisions accomplish their missions, corps plans to commit its reserve armored division in whichever zone produces the best opportunity. In the 23d Armored Division zone, the division opposes elements of an enemy division with its main defensive belt up to 30 km distant (vicinity Line ELM) and its second defensive belt about 25 km deeper (vicinity Line PICK). Security forces are operating in the area between the current position of the armored division and the main enemy force. It appears that the friendly force will encounter various

security elements en route to the main enemy defensive belt.

The division commander decides to move to contact initially on a broad front using multiple routes with two brigades abreast, a tank-heavy brigade in reserve, and the cavalry squadron screening the left flank. When the situation is more fully developed and weakness in the enemy main defensive belt is found, he intends to pass the 3d Brigade through to penetrate Line PICK (suspected location of enemy division's second defensive belt).

While the division commander has a reasonably clear picture of the general enemy situation; i.e., general location of his security area and main and second

FIGURE 4-4. DIVISION OPERATIONS OVERLAY.



defensive belts, the specifics of his dispositions are unknown. The commander knows that leading elements will encounter security forces offering increased resistance as they advance through the initial 12-15 km. He emphasizes to subordi-

nates the need for proper movement techniques and full use of the terrain in the advance. In discussions with the FSCOORD, the commander keys on maximum response from fire support assets to provide immediate suppressive fires for leading

elements. Indirect-fire assets must be well forward to provide initial suppression as well as massed fires as the situation develops. The organization of fire support must provide the flexibility to support small hasty attacks throughout the division zone.

**FOLD OUT FOR
PAGE 4-11 WITH FIGURE 4-4.**

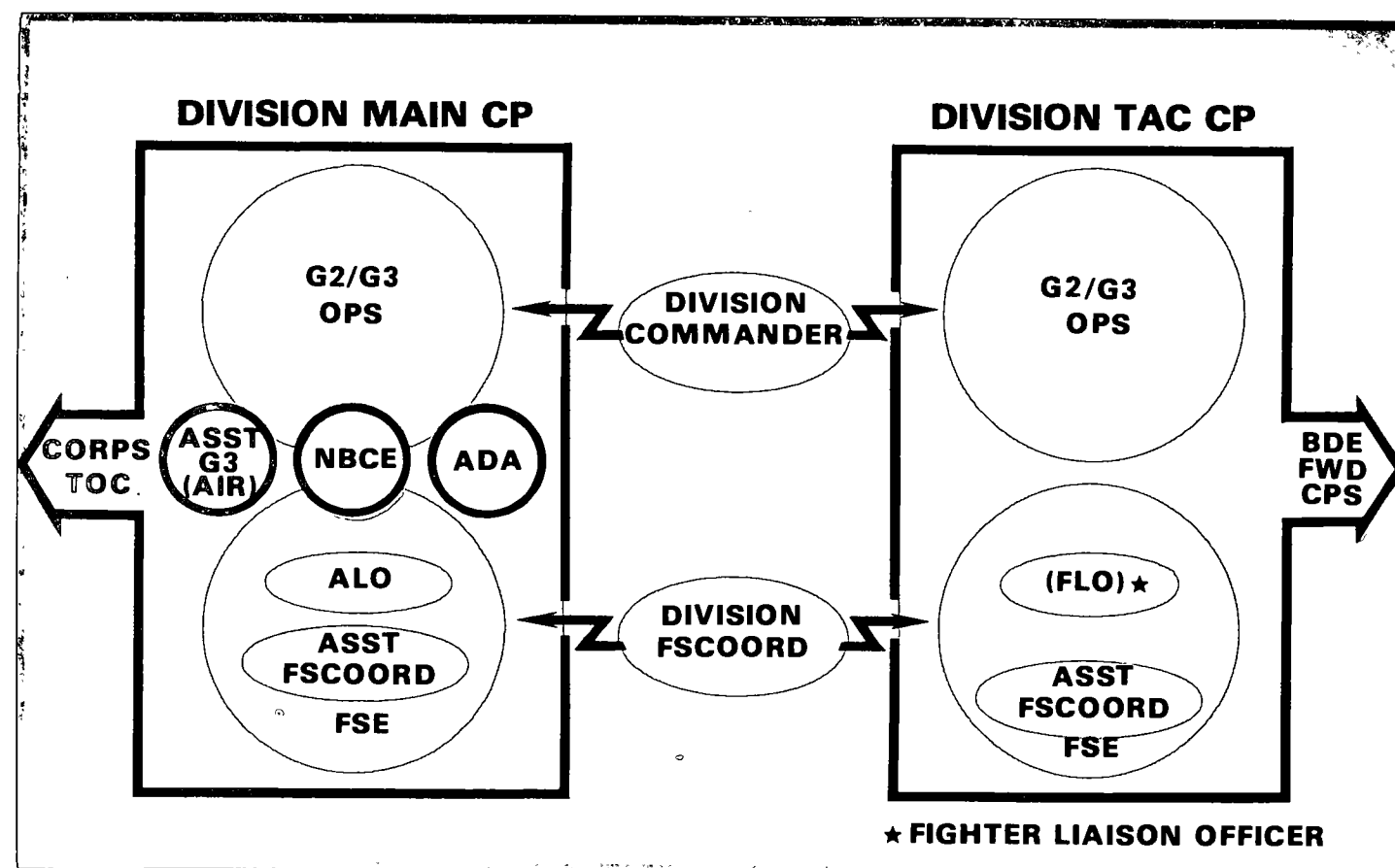
FSCOORD Activities. The division commander uses both a main CP and a tactical CP to plan and execute the division movement to contact. The main CP is primarily involved in planning, while the tactical CP is concerned with immediate and near-immediate operations. As division FSCOORD, the division artillery commander is responsible for planning and coordinating fire support for the operation. The division commander and FSCOORD continually interact and normally are located "where the action is." The FSCOORD is represented in each CP by an assistant FSCOORD. These and other key individuals/elements in each CP are shown in figure 4-5.

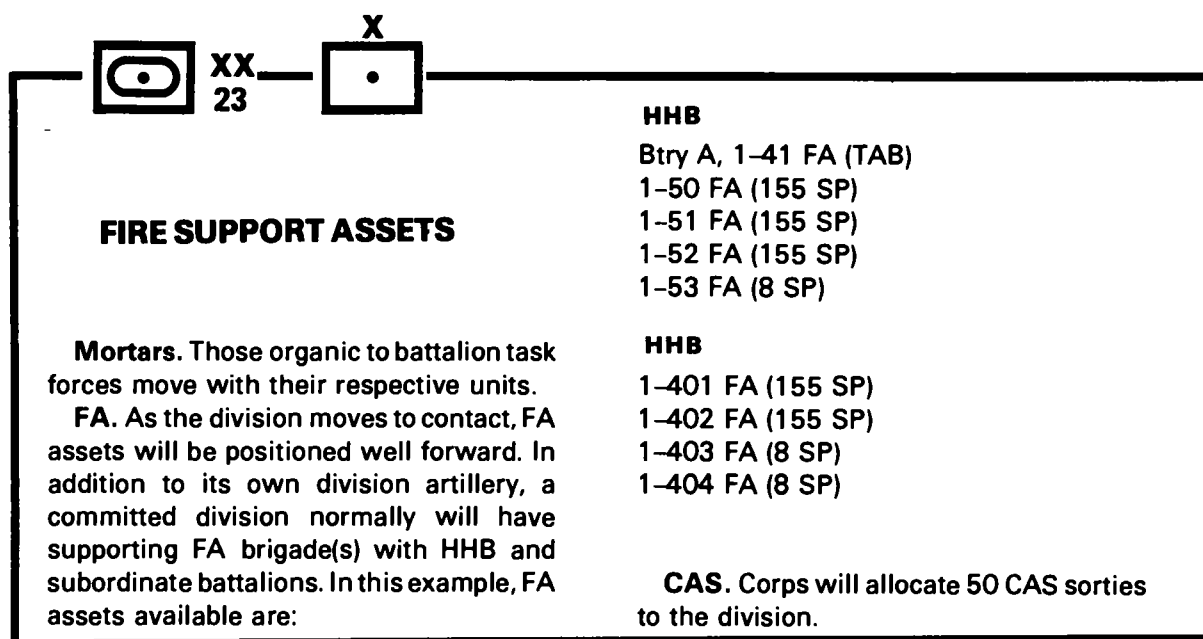
For a more detailed discussion of division main and tactical CP elements, see appendix I. During the planning phase for a movement to contact, the FSCOORD must provide the division commander with information on enemy fire support, recommend organization and allocation of friendly fire support assets, coordinate target information needs with division intelligence sources, and supervise preparation of a division fire support plan that will adequately support the movement to contact. Considering the enemy situation and the commander's guidance, the division FSCOORD determines the following division level fire support tasks for the movement to contact:

- ☐ Augment the fires of committed brigades.
- ☐ Attack deep targets as acquired.
- ☐ Provide counterfire.
- ☐ Attack enemy electronic jammers.
- ☐ Suppress enemy air defenses to facilitate air operations.
- ☐ Mass fires against large enemy forces.

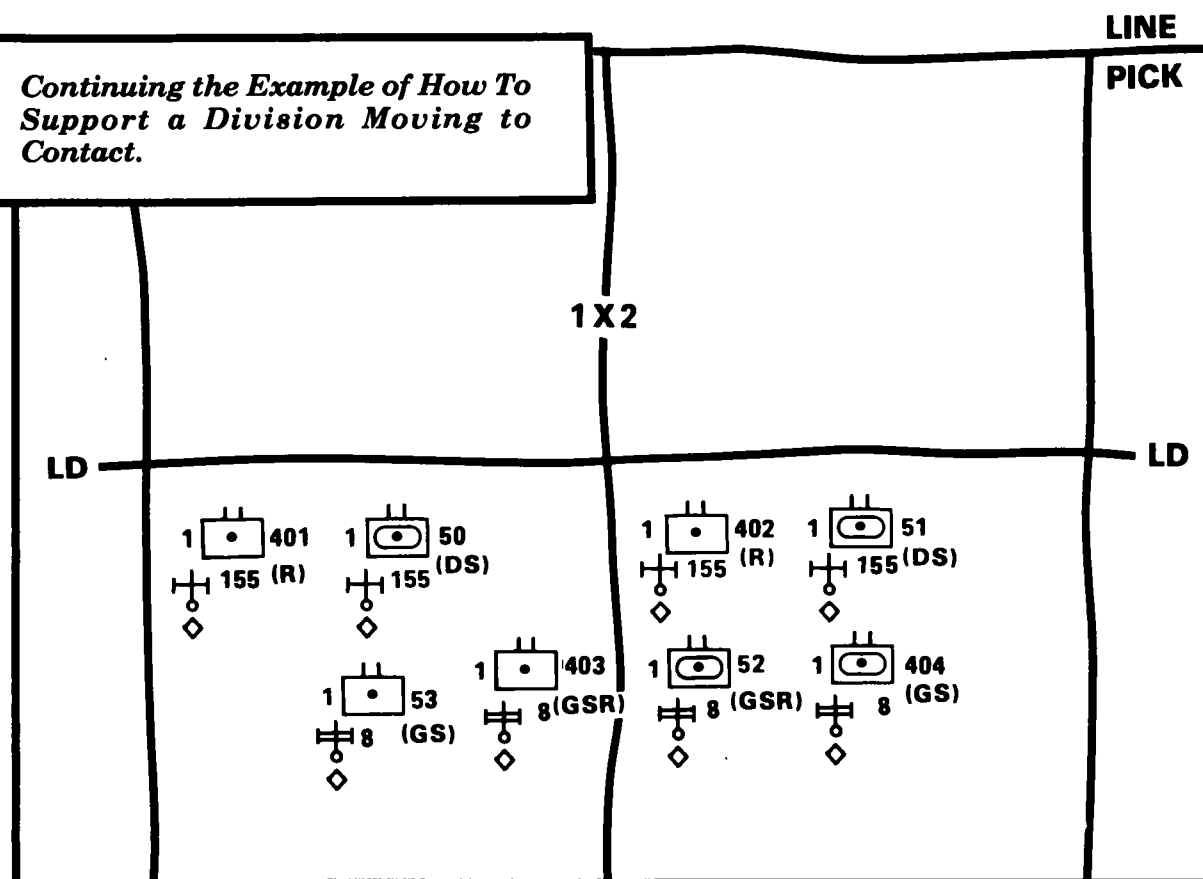
Field artillery and CAS tasks include all those listed above. Because brigades will advance with relatively small forces forward, they must have immediately responsive fire support. At the same time, the division commander must have fire support with which he can attack deep targets or react to unforeseen developments.

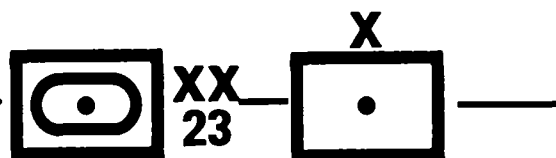
FIGURE 4-5. DIVISION FSCOORD'S FIRE SUPPORT MANAGEMENT CONTACTS.



Fire Support Assets

Continuing the Example of How To Support a Division Moving to Contact.





ORGANIZATION FOR COMBAT

FA

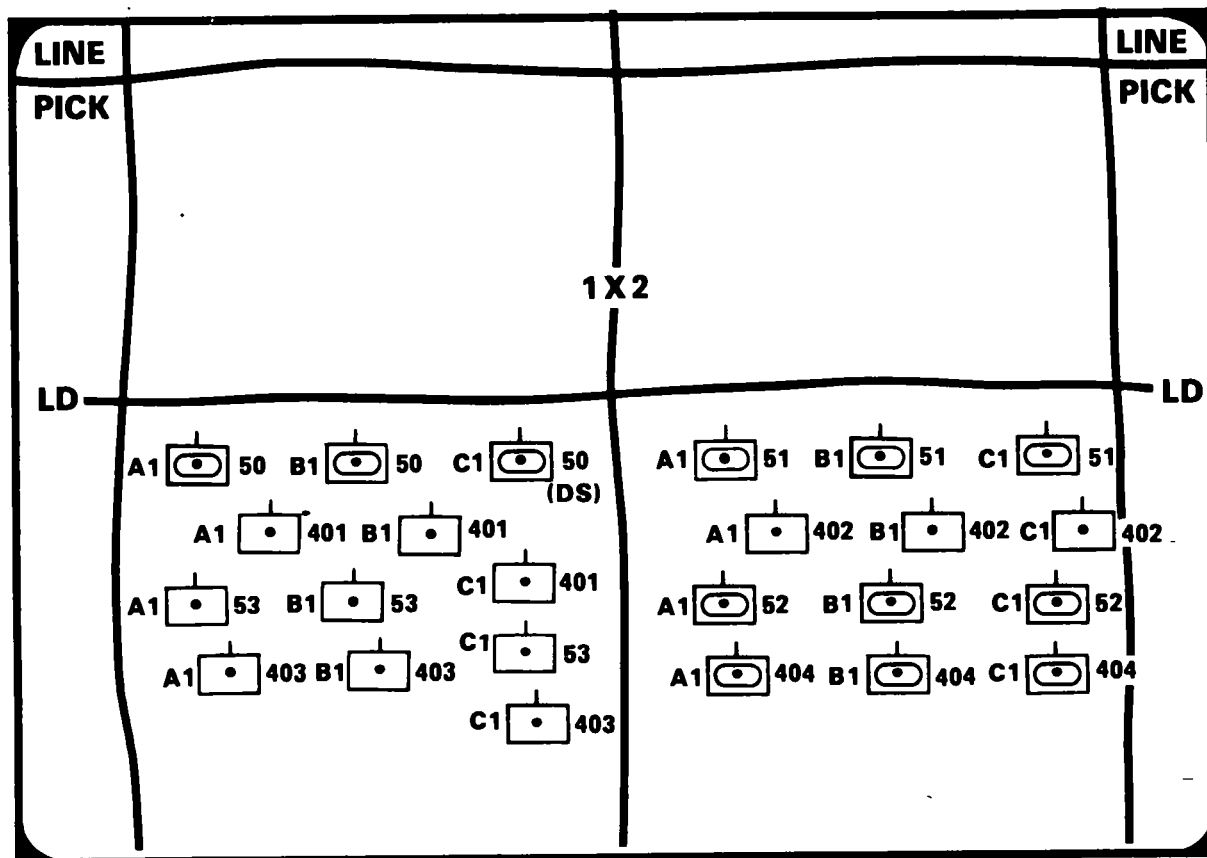
1-50 FA: DS 1 Bde
 1-51 FA: DS 2 Bde
 1-52 FA: GSR 1-51 FA;
 O/O DS 3 Bde
 1-53 FA: GS (2d priority of
 fires to cav)
 1-401 FA: R 1-50 FA
 1-402 FA: R 1-51 FA
 1-403 FA: GSR 1-50 FA
 1-404 FA: GS
 HHB,
 101 FA Bde: Div arty alt

Fire Support Organization. Although the division commander has a general idea how the enemy is deployed, the situation is sufficiently vague that he will retain control of some fire support assets to provide the flexibility to react. Once the situation develops, he may further decentralize his fire support assets. The FSCOORD recommends the following use of FA and CAS assets:

CAS. All available CAS aircraft should be placed on ground alert with a mix of antiarmor and general purpose ordnance. Four sorties should take up air alert after the leading elements make contact. Also, 12 CAS sorties should be allotted to each leading brigade.

This organization insures responsive fire support for the leading brigades, provides support for the screening cav squadron, and gives the division commander a considerable amount of firepower with which he can influence the battle.

Because of the uncertainty about enemy units and locations, the division artillery commander keeps the division artillery's moving-target-locating radar and three weapons-locating radars under division control along with the sound and flash platoons until the situation is developed and they can be properly positioned. He allocates two FA AOBSR teams and one weapons-locating radar to the DS FA battalion of each committed brigade.



The artillery brigade headquarters is named division artillery alternate.

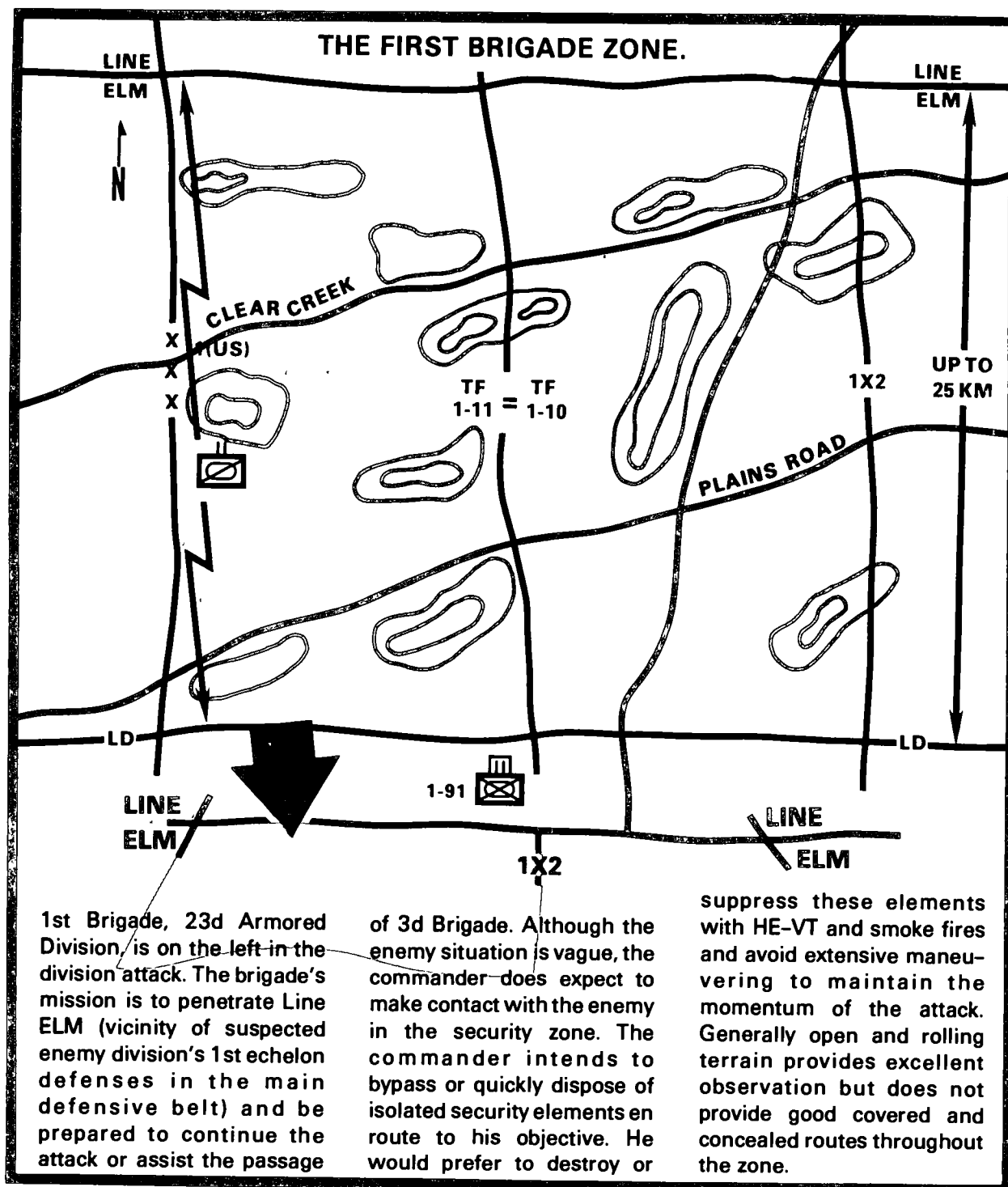
Fire Support Planning. The lack of information about the enemy will cause most initial division-level fire support planning to be predictive. Fires will be planned on *likely* locations of enemy positions and reserves, indirect-fire units, command control elements, and logistics sites. Most of these will be attacked as acquired.

Positioning of Fire Support. The division artillery commander will position the GS and GSR field artillery. He must insure that it is all positioned well forward and that 1-53 FA is positioned within range of the cavalry squadron. The 1-52 FA will be positioned to provide GSR fires to 1-51 FA and move easily into its on-order mission, DS

to 3d Bde. FA can be positioned only after coordination with the maneuver unit that "owns" the position area. Occasionally, when brigade zones are very shallow, this may be the division commander. Normally, *all* field artillery positions will fall within a brigade zone and will have to be coordinated with the maneuver commander at that level. The GS artillery will be echeloned forward as the movement to contact progresses.

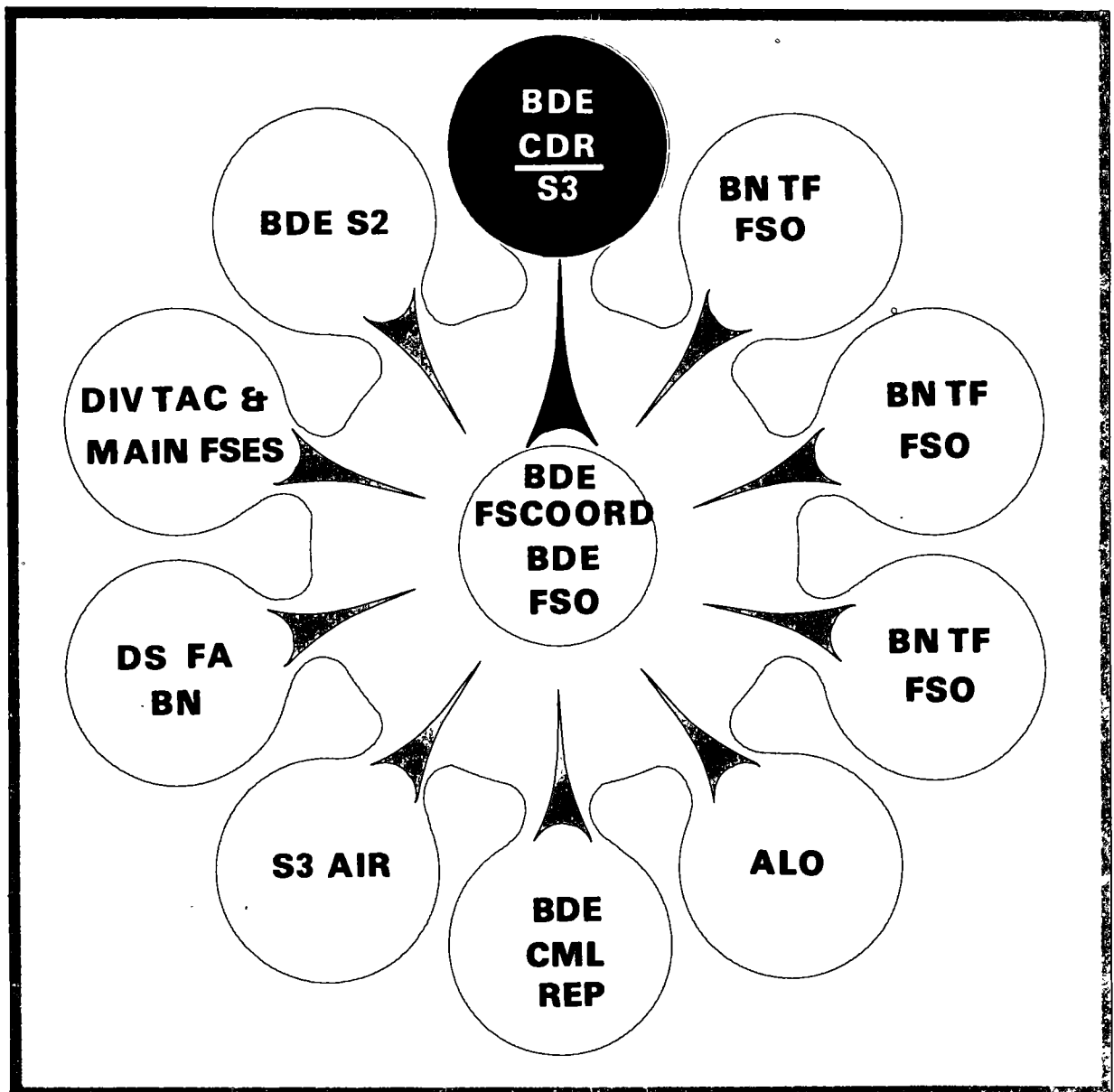
Fire Support Coordination Measures. Corps has established a fire support coordination line (FSCL) 3 km beyond Line PICK to facilitate the attack of deep targets. No division-level coordinating measures are required at this time. The FSCOORD must coordinate the division fire support plan with adjacent divisions.

□ How To Support a Brigade Moving to Contact



FSCoord Activities. The FSCoord for the 1st Brigade is the commander of the DS FA battalion. He is assisted by the brigade FSO. Several individuals and agencies become involved in planning fire support (fig 4-6).

FIGURE 4-6. BRIGADE FSCoord/FSO FIRE SUPPORT CONTACTS.



In a movement to contact, the brigade FSCoord must be particularly careful to insure that—

- each leading bn TF has access to immediately responsive fire support, and
- targets of *brigade* interest are attacked with the appropriate FS means.

At *brigade level*, the *specific* fire support tasks include—

- obscuring enemy vision and screening movement of advancing elements with smoke,
- providing fast massed fires from all fire support means to support brigade hasty attack or to stall enemy counterattacks,
- massing fires against mobile reserves and command posts deep in the brigade zone,
- attacking enemy mortars as acquired and other indirect-fire weapons in close coordination with the division artillery counterfire system, and
- attacking enemy jammers.

Fire Support Assets. The brigade has been allocated two tank battalions and a mechanized infantry battalion. The fire support assets are organized as follows:

ORGANIZATION FOR COMBAT

Mortars. Those organic to each maneuver battalion task force.

FA.

1-50 FA (155 SP): DS to 1 Bde

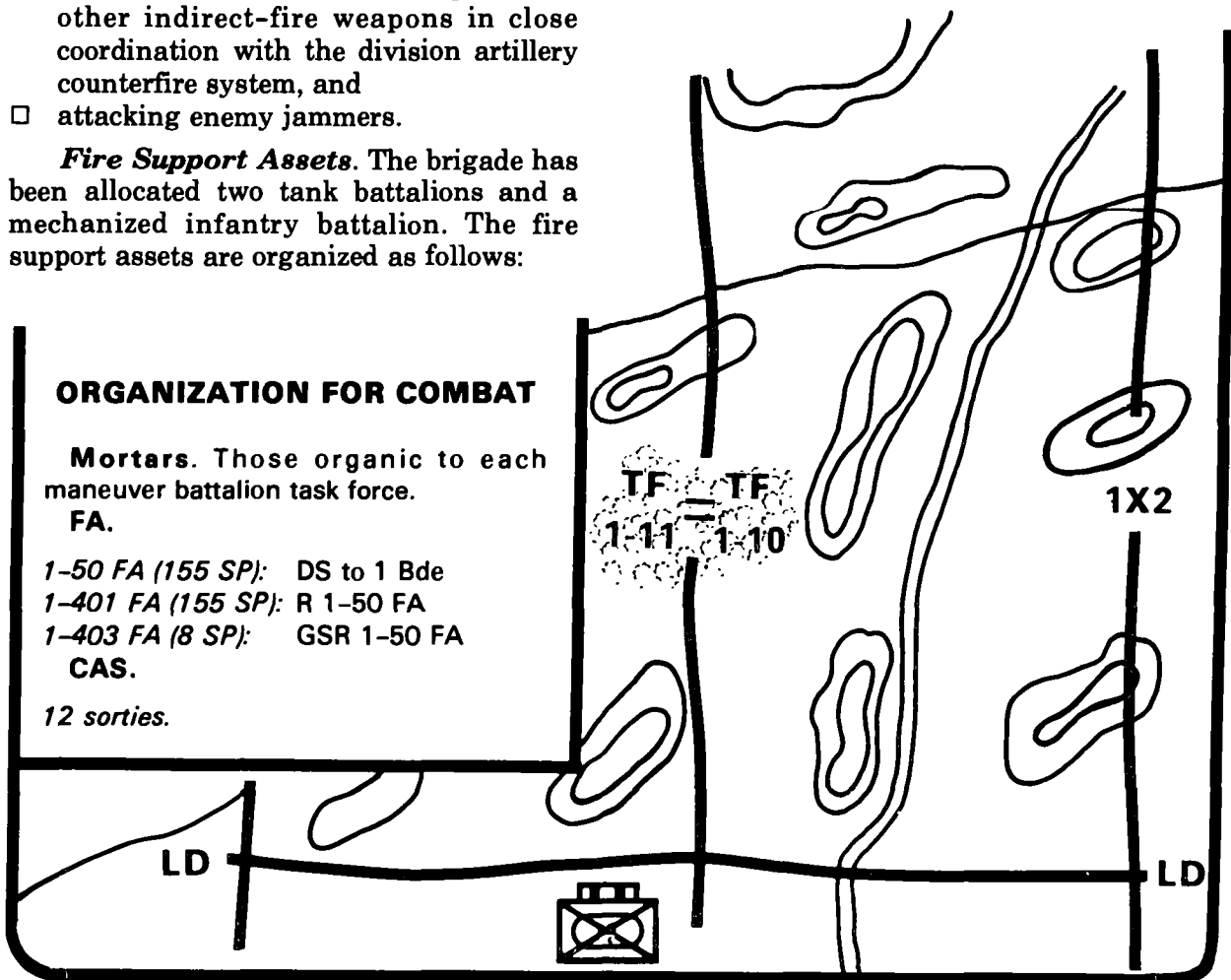
1-401 FA (155 SP): R 1-50 FA

1-403 FA (8 SP): GSR 1-50 FA

CAS.

12 sorties.

After analyzing his mission and mentally fighting the battle through Line ELM, the commander decided to lead with two tank-heavy task forces and retain the third tank-heavy task force in reserve as shown below. To move on a broad front, he directs that task forces use multiple routes. Since enemy contact is expected shortly after crossing the line of departure (LD), lead elements will move using bounding overwatch techniques. (Further discussion of movement techniques is in FM 71-1, *The Tank and Mechanized Infantry Company Team*.) With enemy contact imminent, the brigade commander is particularly concerned that immediate indirect-fire suppression be available to leading elements at all times during the movement through the enemy's security zone.



Additional Fire Support Assistance. Two field artillery aerial observers from division artillery HHB and a countermortar radar section from the TAB are responsive to the brigade's needs for fire support.

Fire Support Organization

CAS. Since enemy strength and location intelligence is not detailed enough to forecast which leading TF will encounter heaviest opposition, the FSCoord recommends brigade control of all 12 CAS sorties.

FA. Within a brigade zone, a field artillery battery may be dedicated to a maneuver company team during the movement to contact. Dedication, an extension of the direct support mission, *increases the responsiveness* of the dedicated battery to *one* specific company or company team. *Dedication should be used only under movement to contact conditions*, and even then its use is relatively rare. In certain cases, however, such as movement to and through the enemy's security area when the *enemy situation is vague* and a *meeting engagement seems likely*, it may pay the brigade commander and his FSCoord to dedicate FA batteries to insure *immediately* responsive suppressive fires to support leading company-size elements. Dedication is an *extension of the direct support mission*. When in a dedicated status, a battery will—

- ☐ monitor supported maneuver company command nets,
- ☐ use simplified calls for fire,
- ☐ deviate from normal fire planning techniques,
- ☐ use maneuver company team control measures for fire planning,
- ☐ streamline fire direction and firing battery procedures, and
- ☐ have FO work for speed first and accuracy second.

Additional details on the dedicated battery are in Appendix B.

When in a dedicated status, a battery will be able to deliver immediate suppression fire on a priority target in less than 20 seconds (not including time of flight). This responsiveness is purchased at a price. *Although the responsiveness of FA support to the leading company team has been vastly increased, the dedication of the battery significantly reduces the firepower immediately available to the brigade as a whole.* This is why the brigade commander and his FSCoord must carefully weigh the alternatives before deciding to dedicate a battery. Commanders and FSCOORDs must consider—

- ☐ terrain,
- ☐ field artillery available,
- ☐ unit preparedness, and
- ☐ target acquisition available.

If the situation seems to be one of those rare occasions when dedication of a battery is warranted, the decision is made as shown in figure 4-7.

A battery's transition *into* dedicated status can be either *hasty* or *deliberate*; however, once the decision has been made to dedicate a battery, approval of the brigade commander must be obtained before the DS battalion can be released from the requirement. Generally this release is sought when—

- ☐ a dedicated battery can no longer be supplied,
- ☐ the mission of the supported maneuver company/company team is changed and dedication is no longer required, or
- ☐ the intensity of the battle reaches a level at which fire support requirements of *the brigade as a whole* outweigh the need for providing dedicated fires to a single company team.

FIGURE 4-7. CONSIDER SITUATION.

BDE CDR

Considering the advice of the DS bn cdr and the requests of his maneuver battalion commanders, designates the maneuver company(company)/company team(s) to receive the dedicated battery (batteries).

FIGURE 4-7. MAKE DECISION.

DS BN CDR (BDE FSCoord)

Decides how many batteries he can dedicate without seriously degrading the overall support of the brigade.

CONSIDER SITUATION.

BDE CDR

Recognizes the tactical situation as one that requires increased field artillery responsiveness for his maneuver company(company)/company team(s).

MAKE DECISION.

DS BN CDR (BDE FSCoord)

Designates the specific firing battery to be dedicated to a particular company/company team.

**FOLD OUT FOR
PAGE 4-19 WITH FIGURE 4-7.**

In the *movement to contact* situation being considered, the brigade has its 155-mm battalion reinforced by a battalion from the FA brigade. The brigade commander and his FSCoord decide to dedicate a battery to one company team in each of the two leading task forces. The DS battalion commander retains one of his own batteries and the reinforcing battalion to support the remainder of the brigade. The FSCoord recommends that the dedication of the two batteries begin immediately to support the movement of company teams.

Fire Support Planning. The FSCoord at brigade must insure that fires are planned on targets of interest to the brigade as a whole. Close air support will be used to attack moving targets, massed enemy armor, and fortified positions against which other fires have little effect. Field artillery fires are planned on likely indirect-fire positions and on likely enemy overwatch or reserve assembly areas in the brigade zone.

Positioning of Fire Support

CAS. The FSCoord recommends ground alert status for CAS. Two aircraft will prepare to assume air alert on call.

FA. In this case—since a meeting engagement is likely and bounding overwatch is expected to begin at the LD—the FSCoord moves the two batteries that will be dedicated into position as near the LD as minimum range permits. In this way, the batteries will have time to harden their positions prior to the beginning of the operation. Had the movement to contact begun with units in traveling or traveling overwatch, the dedicated batteries would have followed behind leading company teams but would not have occupied firing positions until just before bounding overwatch began. The remaining battery of the DS battalion and the reinforcing

battalion's batteries also occupy firing positions just behind the LD. They will "leapfrog" forward as the movement progresses so that at least two of the four nondedicated batteries always will be in position to fire. The supporting counter-mortar radar will be positioned to cover areas from which enemy mortar fire is expected.

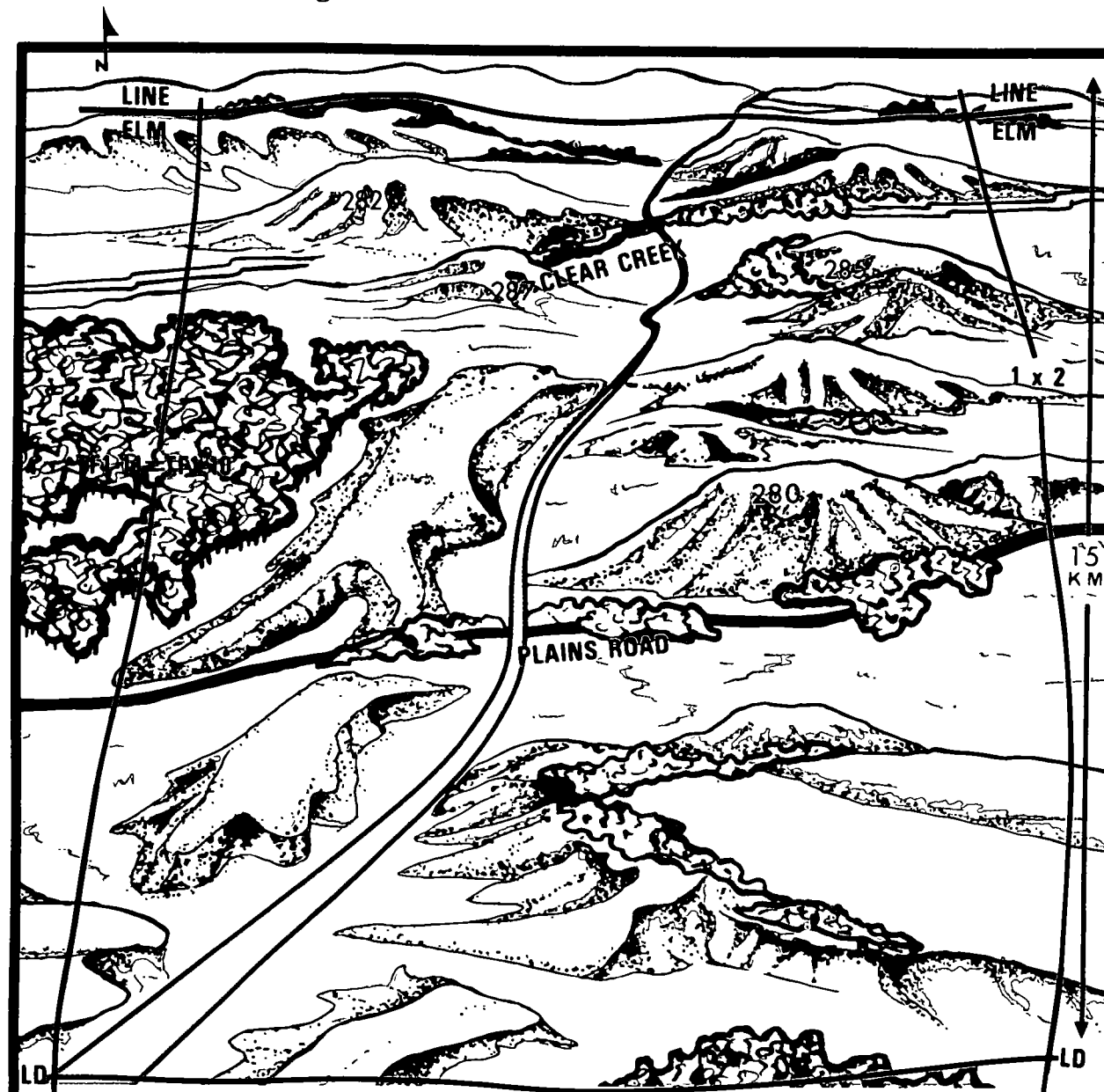
Fire Support Coordination Measures. The FSCoord insures that all brigade elements have the corps FSCL and recommends establishment of a brigade coordinated fire line (CFL) approximately 2-5 km ahead of leading elements. In this case, the CFL is tied to the phase lines used to coordinate the maneuver movement. As leading elements approach each phase line, the CFL is shifted to the next phase line.

Coordination with Adjacent Units. The FSCoord exchanges plans with the 2d Brigade FSO and the armored cavalry squadron FSO.

Coordination of Smoke. The battalion FSO briefs FIST chiefs on availability of FA and mortar smoke ammunition. When company teams plan smoke to screen movement or obscure enemy vision, FSCOODs insure that the smoke does not interfere with activities of adjacent units or obscure the vision of anticipated CAS aircraft.

Since this is a movement to contact situation, immediate obscuration and suppression of enemy positions is paramount. The FSO advises the FIST chiefs to use mortar smoke (WP) for a rapid buildup of obscuration because mortars have a high rate of fire. FA smoke (HC) should be used to sustain smoke on a target requiring longer obscuration because HC lingers and burns longer than WP.

□ How to Support a Battalion Task Force Moving to Contact



TF 1-10 Armor, as part of 1st Brigade, has the mission to attack to penetrate Line ELM in zone and be prepared to continue the attack or assist passage of 3d Brigade elements in zone. Intelligence indicates the task

force will encounter scattered security forces shortly after the task force crosses the line of departure. The commander will attempt to bypass or destroy those isolated elements and continue rapidly to his

objective. The generally open and rolling terrain in his zone permits rapid movement and excellent observation, but good cover and concealment are limited. For this mission, the task force has available the following major assets:

TANK-HEAVY TASK FORCE ORGANIZATION

2 tank companies
1 mech inf co (w 2 TOWs)
Cbt spt co (w 6 TOWs atch)

FIRE SUPPORT ASSETS (ORGANIZATION FOR COMBAT)

1 co mortar section (mech co)
1 bn mortar plt (cbt spt co)
1 dedicated FA btry
access to the DS FA bn and through them to the reinforcing FA bn

CAS on call

Engineers:

1 plt (DS)

The task force commander analyzes his mission and war-games courses of action with his S3 and FSO. He decides to attack with two tank-heavy company teams leading and the third tank-heavy company team following. The lead company teams will move out in bounding overwatch posture, capitalizing on terrain to conceal their movement.

Fire Support Planning. With his FSO, the TF commander discusses fire support to be planned not only to suppress likely enemy positions but also to screen movement of bounding elements with smoke where terrain does not provide good concealed routes. The commander also anticipates the requirement for company team hasty attacks and possibly a battalion hasty attack en route to his objective. He directs massed fires be planned on Hill 290 as well as Hill 287 and Hill 285, where he expects to make hasty attacks.

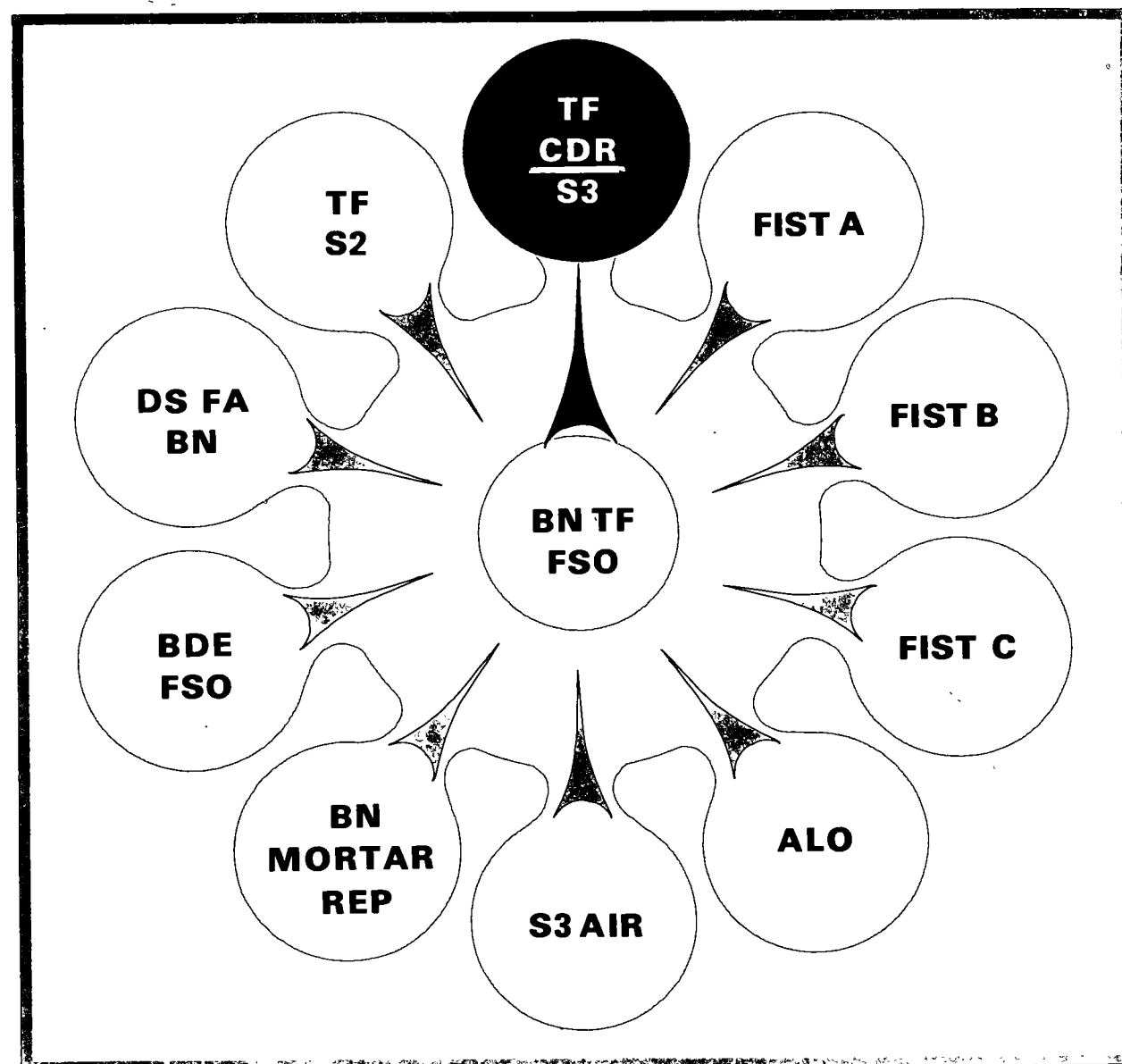
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The commander and FSO also determine other targets deemed critical to the force to provide a framework for the remainder of the battalion fire support plan. These targets and those planned by company teams will be given target numbers allocated to the task force. The numbers will be disseminated to subordinate elements and fire support units.

The TF commander will also designate checkpoints for maneuver reference and control. These, too, will be disseminated to subordinate elements.

The FSCoord at maneuver battalion level is the battalion FSO. In the planning and coordination of fire support, he deals closely with several agencies (fig 4-8).

FIGURE 4-8. COORDINATION OF FIRE SUPPORT BY BN FSO.



In the movement to contact, the FSO is especially concerned with insuring that each leading company team has immediately responsive fire support and with planning fires to support the task force as a whole. Specific fire support tasks include:

- Prepare to rapidly augment the fires of the dedicated battery and the battalion mortars when contact is made.
- Use smoke to obscure enemy observation and/or screen friendly movement.
- Plan fires on likely enemy positions or assembly areas deep in the battalion zone.

Fire Support Organization. Since one of the two leading company teams (Company Team B in our example) has a dedicated FA battery, the battalion commander and the FSO decide to place the battalion mortar platoon in direct support of the other lead company team. This gives each of the leading company teams immediately responsive fires.

The battalion also has access to the fires of the other five nondedicated batteries that support the brigade.

Planning. The FA dedicated battery fires will be planned by the Company Team B commander and the FIST chief on the basis of guidance from the TF commander and the FSO. The battalion FSO monitors and records targeting data as the FIST chief transmits it to the dedicated battery FDC on the FA battalion CF or dedicated F net. If the FIST chief uses a more secure means, he must insure that the fire plan reaches his battalion FSO, who will perform normal fire support coordination and pass the plan to the DS battalion FDC.

In particular, the battalion FSO must anticipate action required after contact is made and the battalion moves into the hasty attack. The FSO plans fires to support hasty attack contingencies, fires on likely enemy locations and reserve positions, and obscuring fires to support the battalion.

When these targets essential to the task force have been added, the FSO and the task force commander establish target designations and distribute the information.

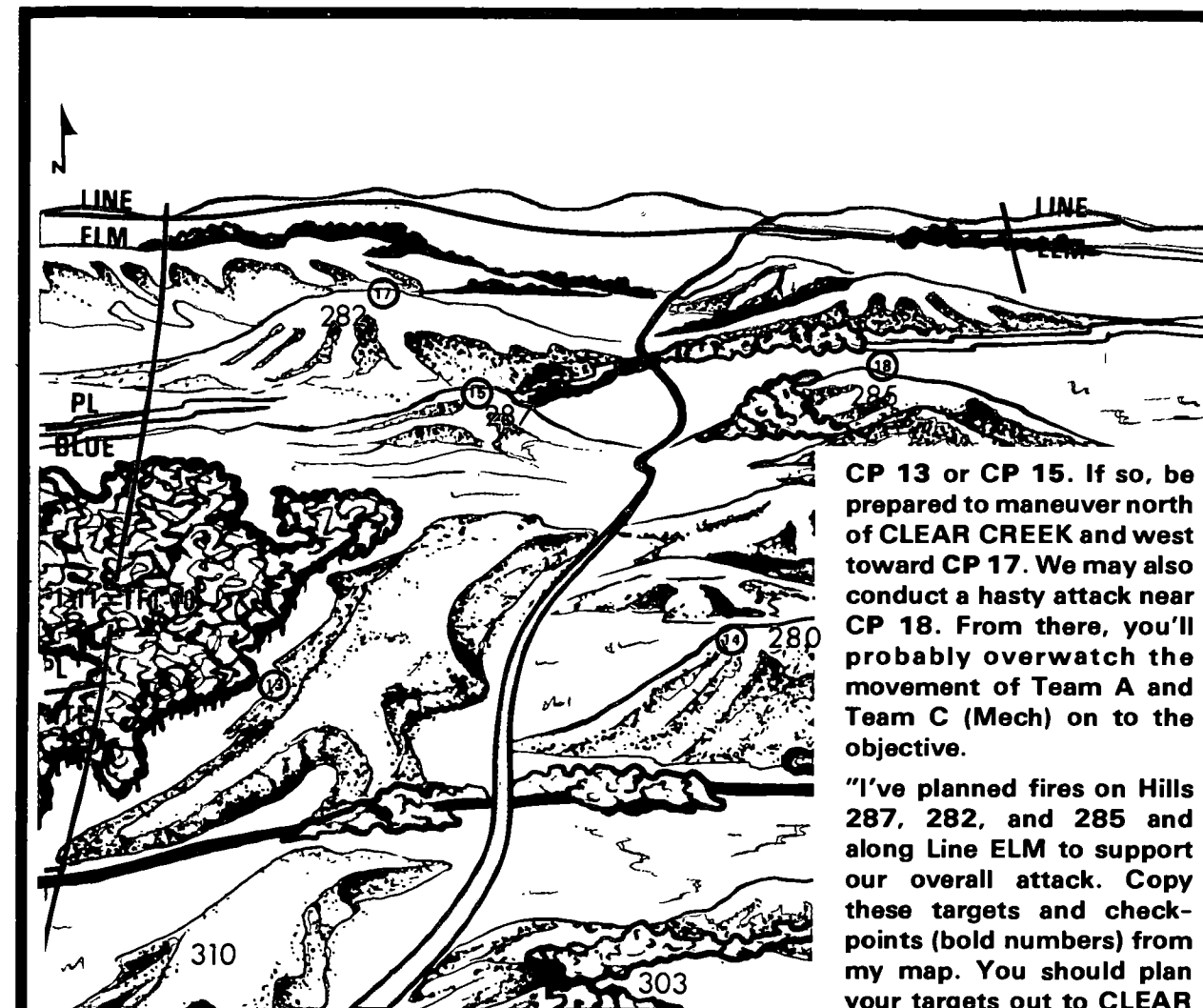
Positioning of Fire Support. The dedicated battery is positioned by the DS FA battalion commander. The battalion mortars—now DS to Company Team A—are positioned by the mortar platoon company leader to focus their fires on Company Team A's advance.

Fire Support Coordination Measures. The battalion FSO is a vital link in the support of a movement to contact. He must insure that each forward company team—whether it has a dedicated battery or not—has access to immediately available fire support. Company teams that have no dedicated battery should designate an adequate number of on-call targets. FIST chiefs should designate targets on which nondedicated batteries, or battalion mortars, can lay their tubes when not engaged in firing other missions.

For a company team that has a dedicated battery, the battalion FSO must—

- closely monitor the activities of the FIST chief working with the dedicated battery;
- constantly examine the tactical situation for the possibility of another company being committed around the initial company, which may change the requirement for a dedicated battery;
- keep the DS battalion FDC informed when a change is expected; and
- inform the dedicated battery FDC of maneuver element movements when it does not receive the information directly.

Situation Company Team B's Movement to Contact



After the battalion commander, S3, and FSO finish their major planning efforts, the commander moves to meet with his company team commanders in their respective areas. While with Company Team B, he gives the following guidance:

"Your team will move through the right portion of the task force zone in a difficult area. You have minimal cover and concealment so I am giving you a dedicated battery. Carefully plan obscuration and screening fires to conceal

your movement. Insure that you coordinate closely with Team A on the left and let the FSO know your smoke plans that may impact on the task force to our right so he can coordinate that.

"I think your first significant contact may occur in the vicinity of checkpoint (CP) 14 so, in addition to immediate suppressive fires, plan some on-call fires from the DS FA battalion there.

"The task force may have to conduct a hasty attack near

CP 13 or CP 15. If so, be prepared to maneuver north of CLEAR CREEK and west toward CP 17. We may also conduct a hasty attack near CP 18. From there, you'll probably overwatch the movement of Team A and Team C (Mech) on to the objective.

"I've planned fires on Hills 287, 282, and 285 and along Line ELM to support our overall attack. Copy these targets and checkpoints (bold numbers) from my map. You should plan your targets out to CLEAR CREEK with the dedicated battery and make sure the FSO gets them, too.

"Once we reach CLEAR CREEK, the situation will probably have developed to require a battalion hasty attack. Since we will need more massed fires of several batteries or even battalions, the dedicated battery will probably be withdrawn. We will then revert to our normal DS FA relationship. If not, you can fill out your dedicated battery fire planning as you near CLEAR CREEK."

□ **How to Support a Leading Company Team Moving to Contact**

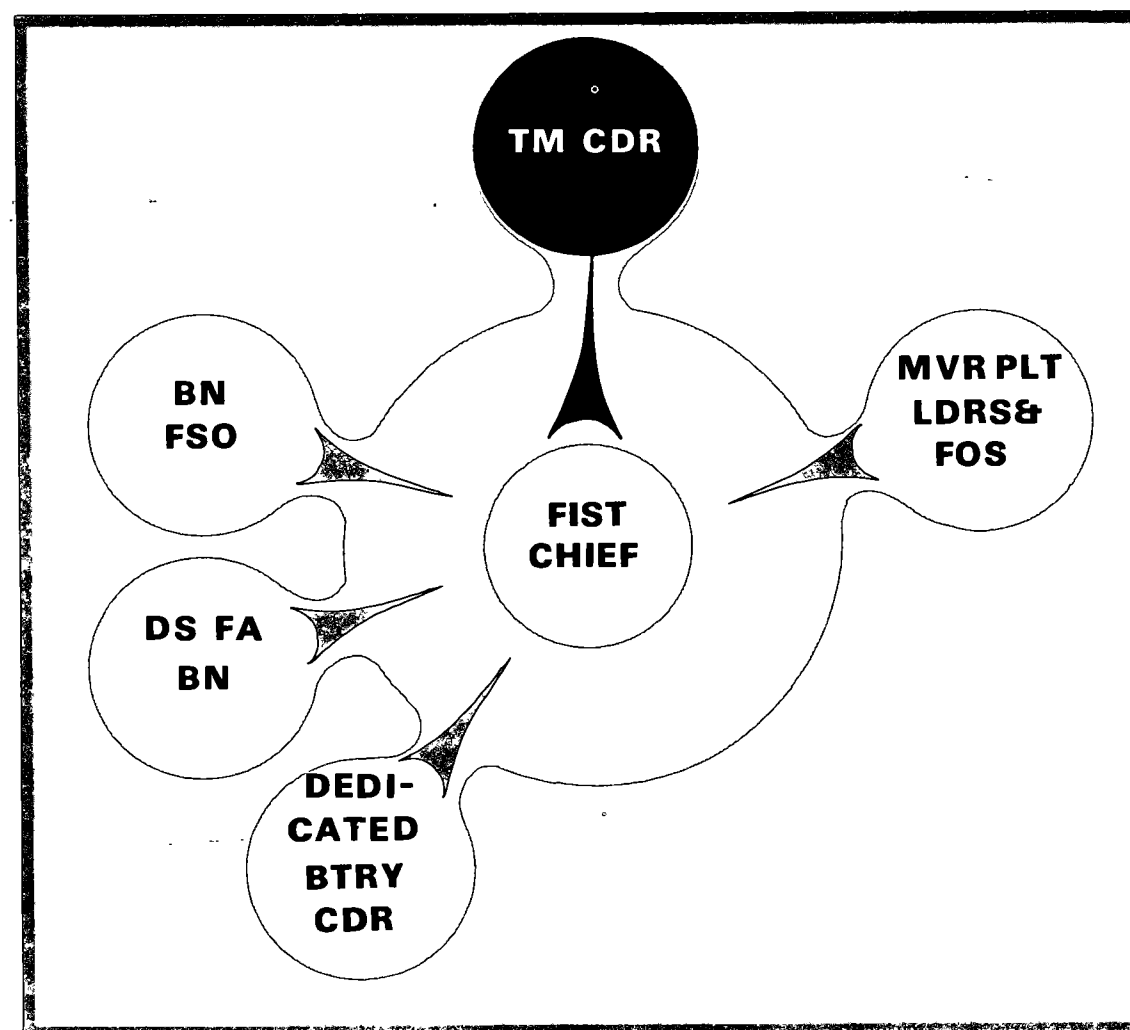
The FSCOORD at company team level is the FIST chief. His fire support contacts are shown in figure 4-9. In a movement to contact situation, he is primarily concerned with *providing immediate suppressive fires* to his company team and with *planning to support the company team's actions after making contact*. Specific fire support tasks are:

- Provide immediate HE and smoke fires to

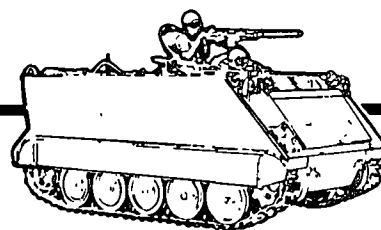
- suppress enemy direct-fire weapons.
 □ Provide smoke to cover the company team's movement.
 □ Attack targets of opportunity rapidly.
 □ Support the company team's maneuver options upon contact (bypass, company team hasty attack, fix, hasty defense).

In this case, since the maneuver battalion mortars are DS to another company team, the immediate suppression will be furnished by the dedicated battery. Other fires will be planned by the FIST chief and delivered by the DS FA battalion.

FIGURE 4-9 FSCOORD (FIST CHIEF) CONTACTS.

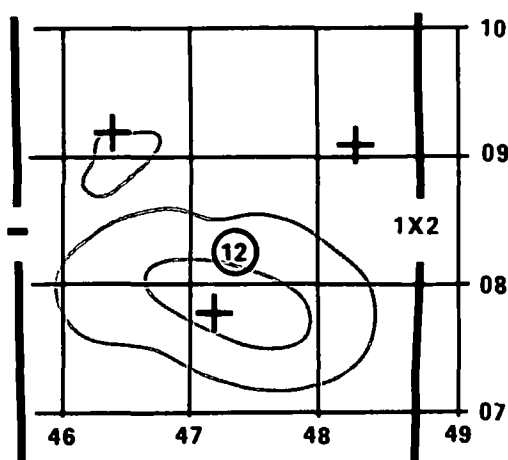


Fire Support Planning. The FIST chief has the primary role in planning the fires of the dedicated battery. He and the company team commander study the route over which the company team will move and they identify those areas that would present the greatest threat if occupied by enemy direct-fire weapons. Suppressive fires are planned on those locations. Additional fires may be planned in areas where hasty attacks are likely. *Only essential targets are planned; too many planned targets may result in confusion and longer response time (fig 4-10).*



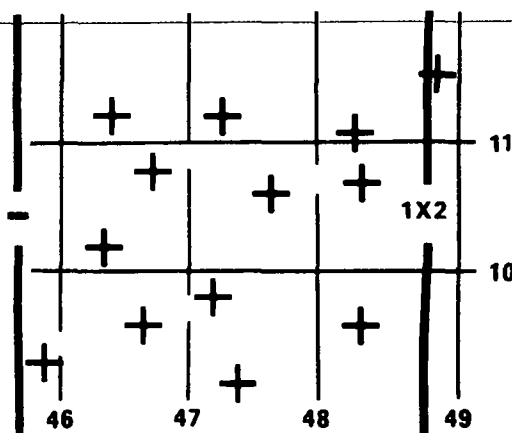
**ONLY
ESSENTIAL
TARGETS**

FIGURE 4-10. CO/TM FIRE PLANNING.



**EXAMPLES OF
FIST TARGET
LISTS SHOWING
ONLY ESSENTIAL
TARGETS**

**TOO MANY
TARGETS
(MEASLE SHEET)**



The company team commander will then designate three targets as "priority targets." Two cannons of the dedicated battery are laid on a planned priority target and should be able to fire within 20 seconds. As the maneuver unit advances, priorities are redesignated at the company team's direction.

Communications. If the fires of the dedicated battery are to be truly responsive, changes must be made in communications procedures. Normally, the dedicated battery and its supported company team are given a fire direction net for their exclusive use. It will be *monitored* by the battalion TF FSO and the battalion FDC—however, *no one* but the FIST and the dedicated battery will enter the net except in an emergency. Other FISTs in the task force will use the battalion CF1, CF2, or another fire direction net for their fire planning. When one dedicated battery relieves another, the relieving battery enters the net using its own call sign.

When possible, the planning of dedicated battery support will take place in a face-to-face meeting between the FIST chief, the company team commander, and the dedicated battery commander. If such a meeting cannot be held, target list, priorities, and control measures (phase lines, checkpoints, etc.) will be sent by courier to the dedicated battery FDC. If radio communications must be used, secure means is preferred. Battalion FSOs and DS battalion FDCs monitor the transmissions and record the data. Additionally, dedicated battery commanders are made aware of contingencies such as hasty attack, bypass, or hasty defense so that the battery can support these actions more responsively should they occur.

If the company team moving to contact has mortars, they will be echeloned forward, moving as necessary to cover the bounding platoons. The company team mortars will operate on the mortar fire direction net and the company team command net.

The dedicated battery will also *monitor* the command frequency of the supported company team. This allows the battery to—

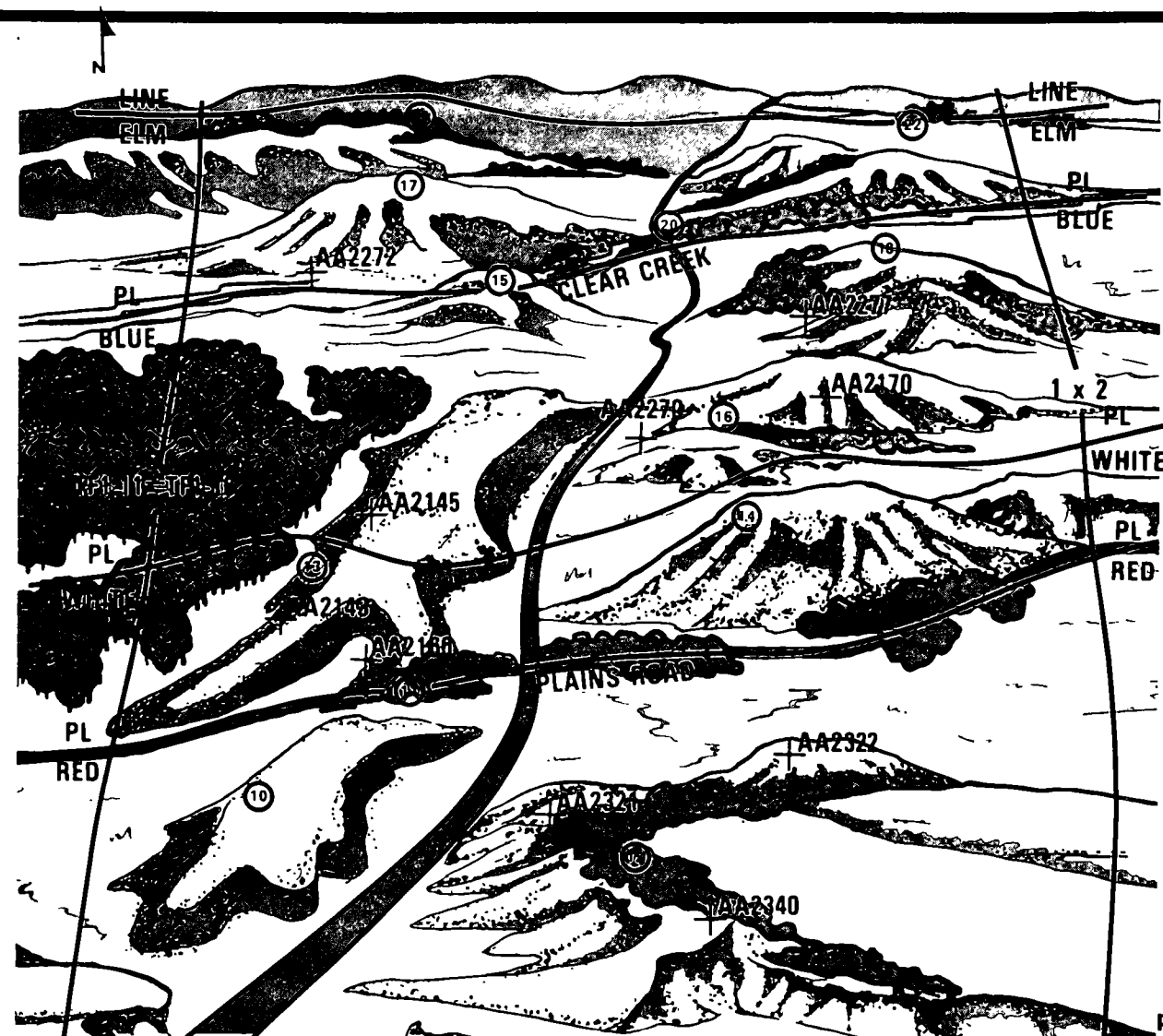
- ☐ follow the company team's progress,
- ☐ anticipate its needs, and
- ☐ answer calls for fire directly from maneuver personnel.

The dedicated battery FDC will insure that field artillerymen do not *enter* this net unless requested to by maneuver personnel—and then they will get out of it as soon as possible.

Fire Support Organization. The company team commander and the FIST chief must insure that they know the duration of the dedication of the FA battery. In this case, since the TF commander has directed that the initial movement from the LD will be by bounding overwatch, the battery will be dedicated when the operation begins. *The dedication will cease when the brigade commander releases the battery, probably when the battalion moves into the hasty attack.*

Fire Support Coordination Measures. DS battalion commanders and S3s must anticipate the possible need to switch the dedication from one battery to another as a result of hostile action, range limitations, or changes in the scheme of maneuver. Such changes must be closely coordinated so that all required information is received by the relieving battery and dedicated support for the movement of the company team continues uninterrupted. If the lead changes between company teams, the battery must coordinate closely with the new company team commander and FIST to provide current planned targets and make adjustments as required.

Situation Continued *Company*
Team B's Movement to Contact 



As the company team commander and FIST chief further analyze the situation, the dedicated battery commander arrives at the Company Team B CP. The company team commander explains the scheme of maneuver to the battery commander and provides targets, checkpoints, and phase lines in the zone. He

identifies those targets that are to be serviced by FA and indicates which ones are considered priority targets. The FIST chief will send changes in priorities to the battery as the company team movement proceeds. The targets, checkpoints, and phase lines for this operation are shown above. (Recall that Targets

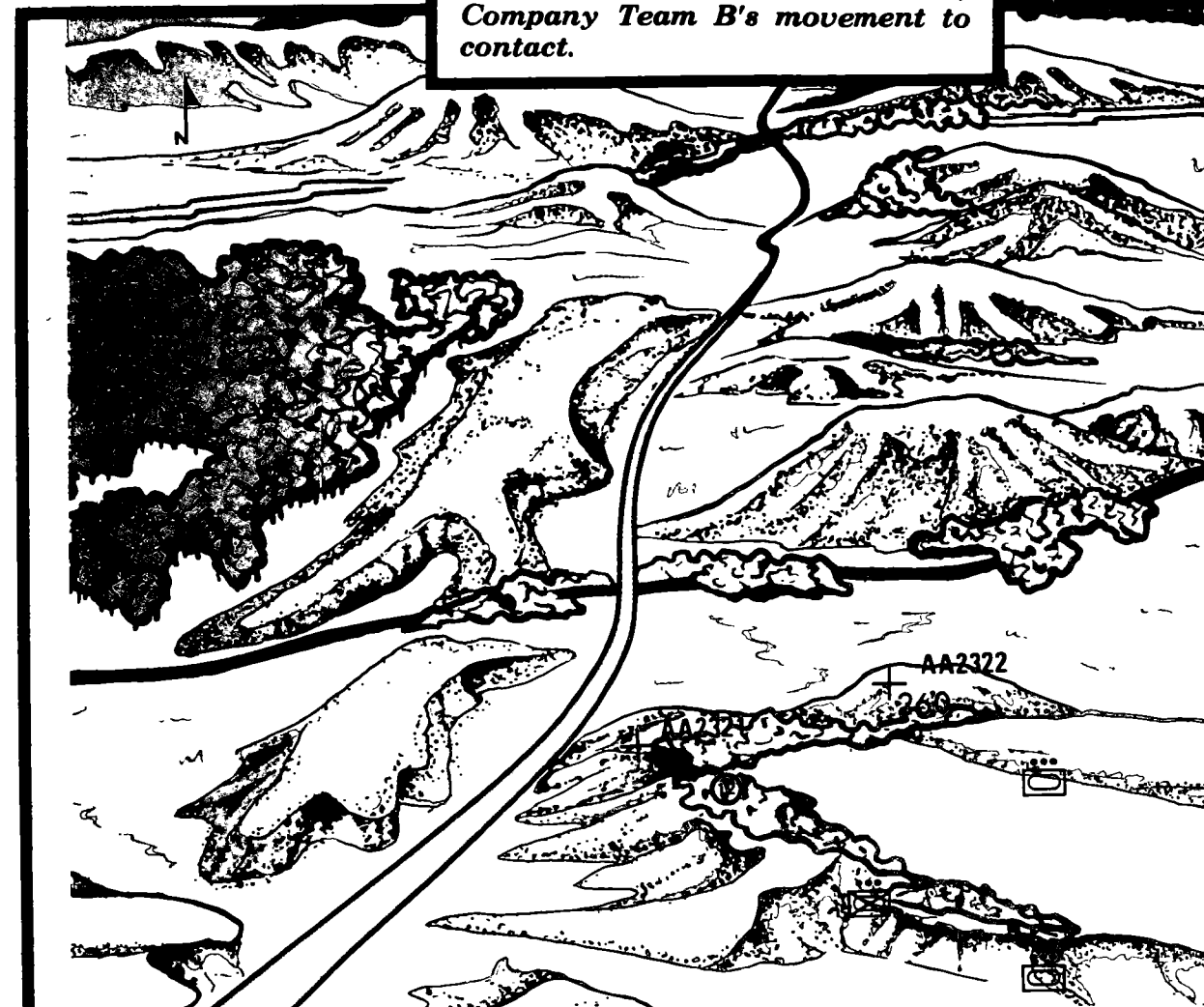
AA2270, AA2272, and AA2160 are among those planned by the battalion FSO before the battalion movement to contact began.)

"We will be leading with tanks all the way unless we run into an area where they begin taking effective ATGM fire. We must suppress likely ATGM

positions en route. The first set of priority targets is AA2340, AA2321, and AA2322. After clearing PL RED, priority shifts to AA2143 and AA2145. As we cross PL WHITE, priority changes to Targets AA2170, AA2270, and AA2277. The FIST chief will tell you the precise time to shift to new targets and keep you advised of any changes."

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Continuing the situation of Company Team B's movement to contact.



The company team dedicated battery commander and FIST chief confirm frequencies, call signs, and the call for fire for suppressive fire targets. The battery will be monitoring the company team command net (as well as the dedicated fire net) to respond to fire requests on that net if necessary.

After this meeting, the FIST chief finalizes the company team targets, passes them to the FSO, and disseminates them to the tank platoons and the mechanized platoon FO. He further insures that they have the proper call signs, frequencies, and call-for-fire format for dedicated battery fire.

One way Company Team B's movement might develop is as follows: After moving to CP 12, dispersed elements of Company Team B (-) are prepared to overwatch 1st Tank Platoon's next bound to Hill 260.

The tank platoon begins moving to Hill 260 and en route receives fire from Hill

260 and the knoll to the west. As the tank platoon returns fire and moves quickly to cover, the FIST chief observes and rapidly calls, "Immediate suppression targets AA2321 and AA2322." At the same time, 2d Tank Platoon engages the enemy in the vicinity of Hill 260. Mech platoon engages the knoll with machineguns. Dedicated battery fires land in 40 seconds. After receiving reports and evaluating the situation, the company team commander decides to fight through.

Enemy fire ceases, but the FIST chief calls directly to the DS battalion FDC to get additional fires to neutralize Targets AA2321 and AA2322. The DS battalion has monitored FIST-dedicated battery communications and is quickly able to mass fires on the requested targets.

The company team bypasses the knoll and assaults Hill 260 as fires continue on Targets AA2321 and AA2322. Fires on Hill 260 are shifted from Target AA2322 just ahead of assaulting forces. The company team occupies Hill 260 and prepares to continue to the north.

In the movement to contact—

- ☐ immediately responsive dedicated battery or battalion mortar fires were provided to leading company teams,
- ☐ fires were planned for hasty attack contingencies,
- ☐ smoke was planned to provide concealed approach routes, and
- ☐ suppressive target priorities were shifted forward as the maneuver force advanced.

process to insure that the task force is prepared to launch a hasty attack as quickly as possible when the need arises. *Fire support is one of the commander's most flexible means of rapidly concentrating combat power in the hasty attack.*

4-7. How to Support the Hasty Attack

☐ How to Support a Battalion Task Force Hasty Attack

Hasty attacks can develop—

- ☐ when a moving force makes contact with an enemy element not known to exist or located in an unexpected position,
- ☐ when a deliberate attack plan is modified after the attack starts,
- ☐ at the conclusion of a deliberate attack when further advance is ordered, and
- ☐ in the defense when a small unit counterattacks.

The primary concern in a hasty attack is to react quickly with fire and maneuver to maintain the momentum of the attack. The commander must *see* the battlefield to make a hasty assessment of the enemy situation, *suppress* the enemy's gunners, and *move* to exploit the enemy's weakness. If a hasty attack appears infeasible or does not succeed, it will be necessary to develop a deliberate attack as described in paragraph 4-8.

Hasty attacks develop quickly with little advanced warning or time for planning. The battalion commander and FSCoord must be prepared for such contingencies. Tentative maneuver schemes and fire support integration must be war-gamed and planned for each area of the battlefield where a hasty attack is likely to occur. This is a continuous

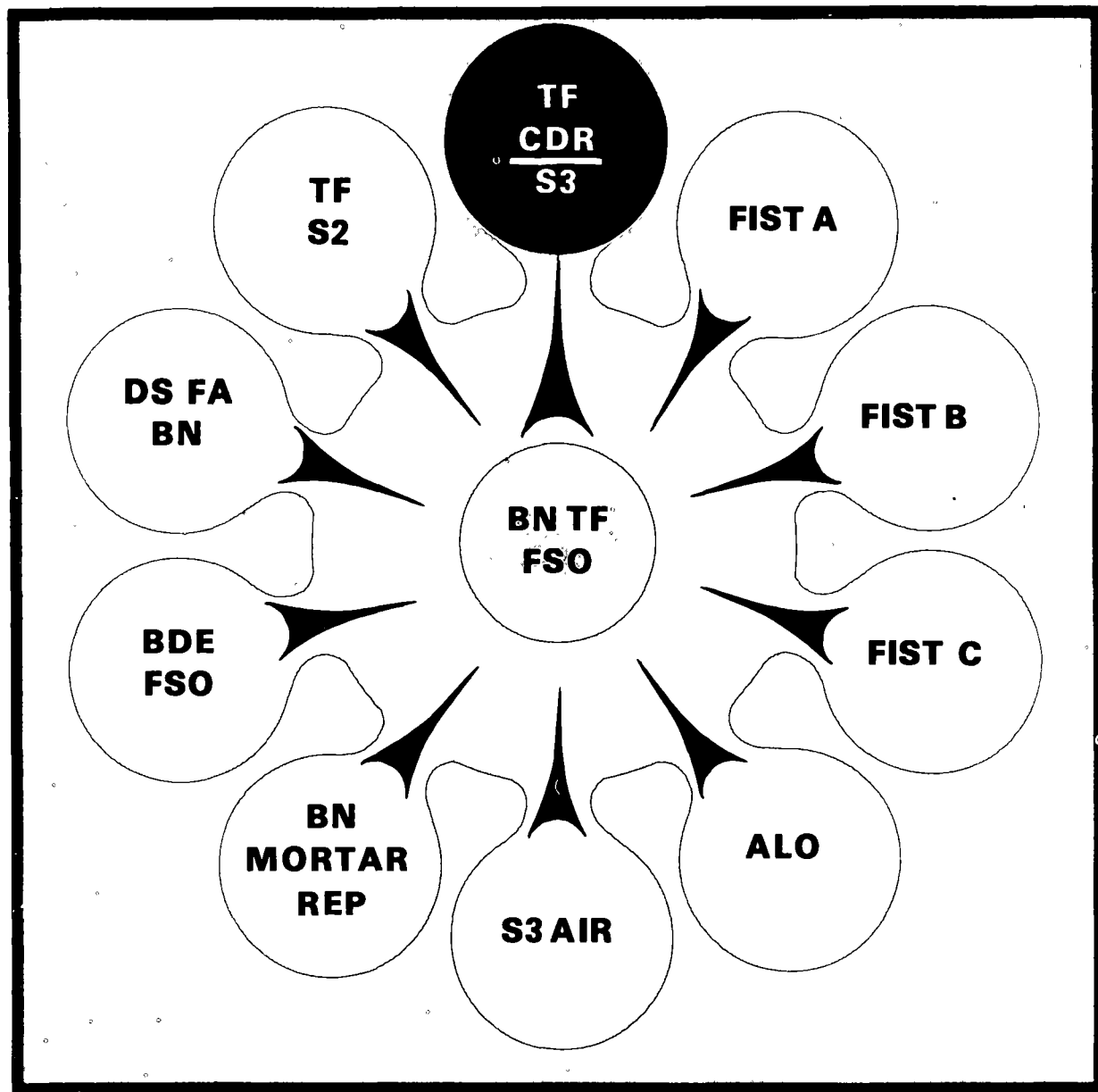
The battalion FSO's contacts in planning and coordinating fire support for a hasty attack are the same as in the movement to contact (fig 4-11).

Fire Support Assets. Fire support available for the battalion task force

conducting a hasty attack normally includes—

- battalion mortars (co mortars also when mech/inf co is/are present),
- access to the brigade's DS and reinforcing FA battalions, and
- access to the brigade's CAS sorties.

FIGURE 4-11. TF FSO FIRE SUPPORT CONTACTS.



Fire Support Officer Activities. FSOs must insure that the following fire support tasks for the TF hasty attack are accomplished:

- ☐ Suppress enemy direct-fire gunners with smoke and HE.
- ☐ Obscure the vision of enemy gunners and screen the movement of friendly attack elements with smoke.
- ☐ Mass fires on lucrative targets.
- ☐ Delay/destroy enemy reinforcements or counterattacking forces by firing on forces in assembly areas or moving to reinforce.

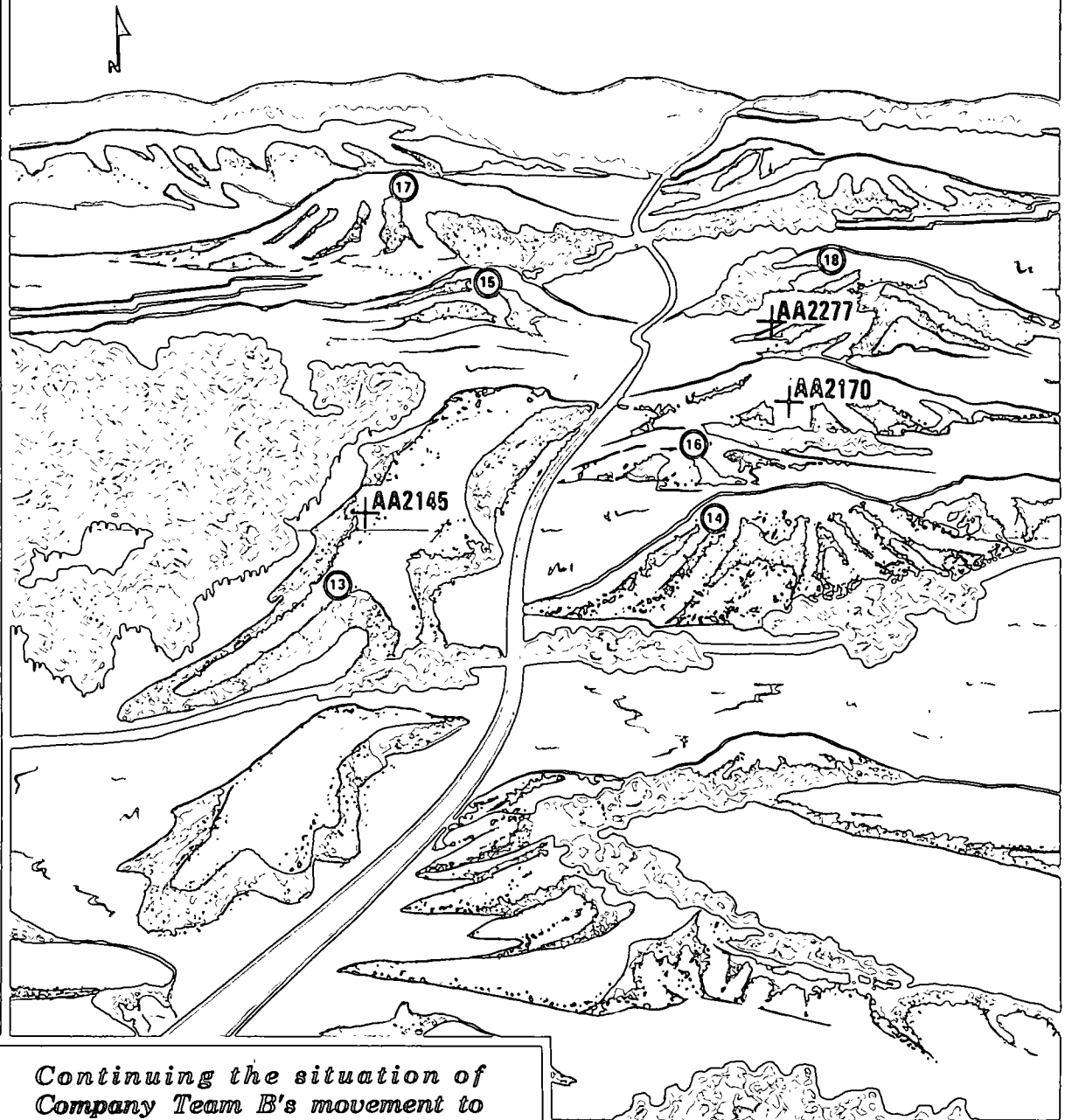
Fire Support Planning. Planning fire support for hasty attack contingencies is a continuous process. It begins in the initial planning for the movement to contact when the commander identifies critical areas possibly requiring hasty attacks. As the situation develops and enemy strengths and dispositions become more apparent, plans are updated so that the FSO can rapidly assess the fire support situation and quickly integrate fires to complement the hasty attack plan. The FSO plans—

- ☐ smoke and HE to suppress potential enemy overwatch positions,
- ☐ smoke to screen friendly movement, and
- ☐ HE or DPICM on likely assembly areas, chokepoints, or other locations where reinforcing enemy forces may be located.

Mortar fires are planned for suppression, smoke, and illumination missions. Although CAS sorties initially may not be allocated down to TF level, the FSO, working closely with the S3 and the ALO, constantly attempts to anticipate the need for CAS. Airborne FACs may not be able to directly control airstrikes because of the enemy air defense environment. In such cases, the FSO must have selected FIST members prepared to augment the ground FACs at critical locations where airstrikes are anticipated.

FIRE SUPPORT PLANNING FOR THE HASTY ATTACK IS A CONTINUOUS PROCESS OF ESTIMATING, UPDATING, AND INTEGRATING REQUIREMENTS FOR FIRE SUPPORT TO MEET UNEXPECTED BATTLEFIELD CONTINGENCIES AND TO COMPLEMENT THE HASTY ATTACK PLAN.

Situation Continued *Battalion
Task Force Movement to Contact*

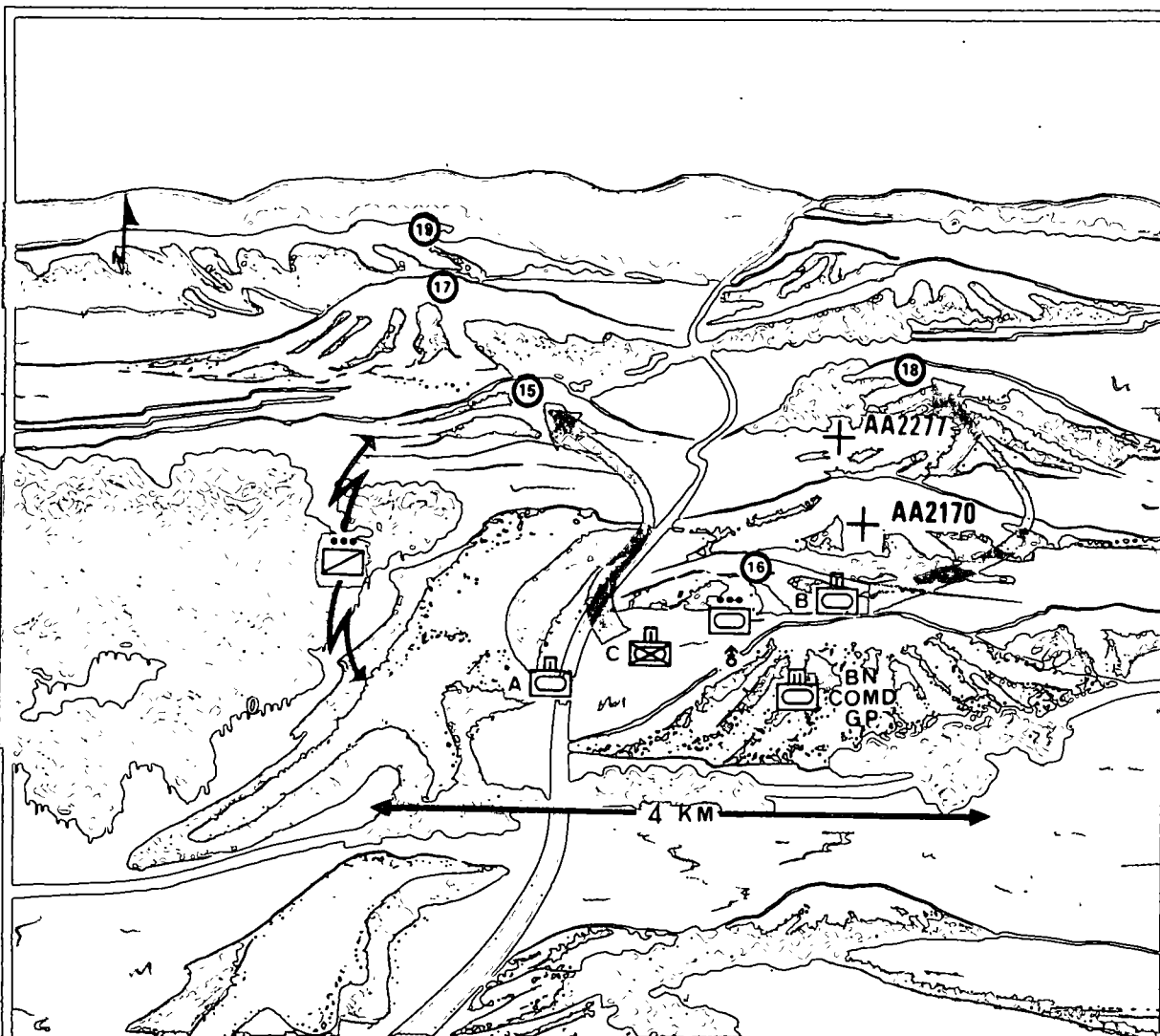


*Continuing the situation of
Company Team B's movement to
contact.*

During initial planning for the task force movement to contact, the commander identified two likely hasty

attack areas, one north of CP 13 and another south of CP 18. Only a limited number of targets were planned. Those targets inserted by the

battalion FSO during initial planning for the movement to contact as well as those added by Company Team B are shown.



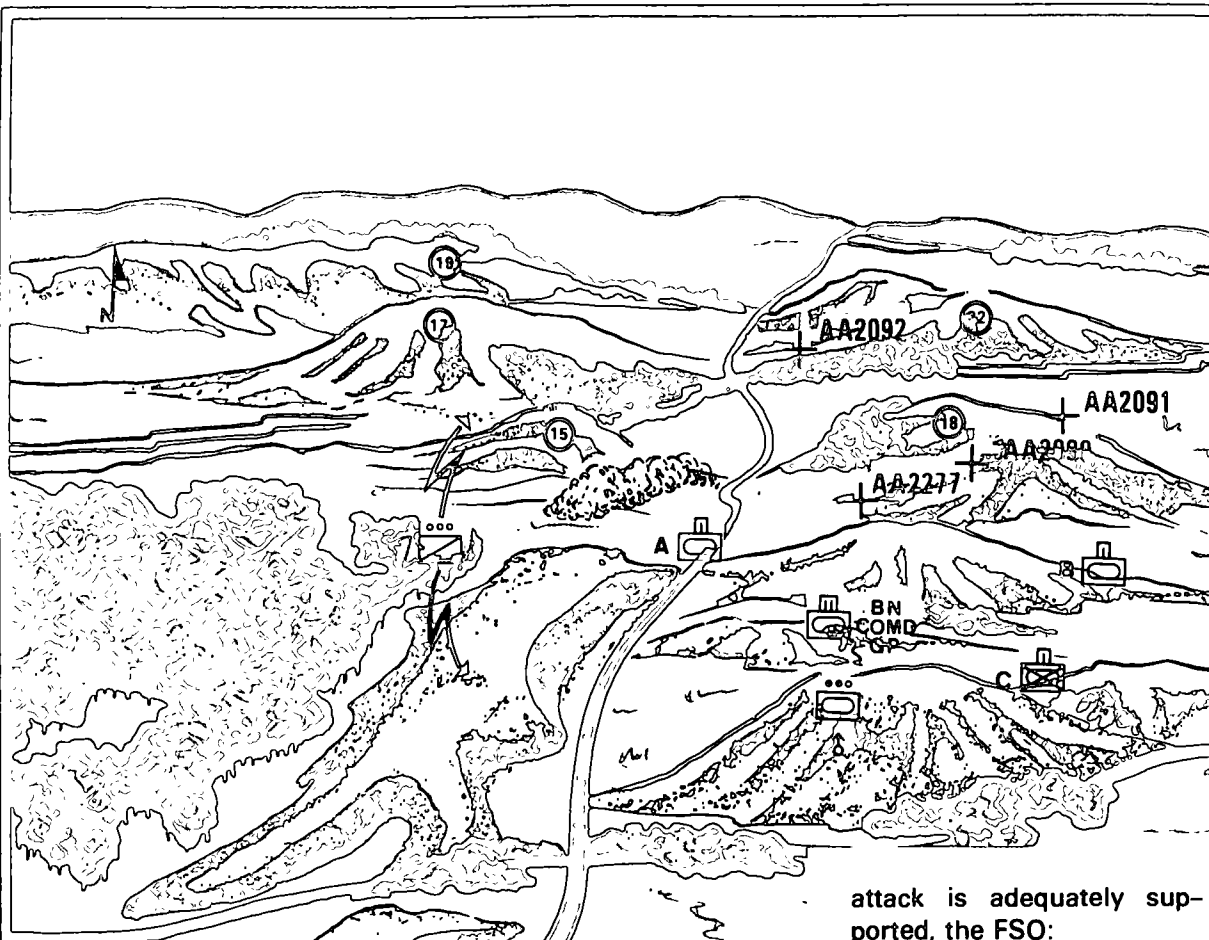
As the advance continues, TF 1-10 Armor, organized into three tank-heavy company teams, has just destroyed an enemy unit on the hill at **CP 16**. The TF is ready to continue the advance to the north against scattered resistance. The TF commander decided to move Company Team A west of the road and then on to **CP 15**. Company Team B moves north along the east side of

the hill toward **CP 18**. The mortar platoon will stay in position behind **CP 16** and answer calls for fire from either Company Team A or Company Team B.

Because of heavy activity in TF 1-11's sector to the west, the **DS FA battalion commander recommended, and the brigade commander approved, termination of Company Team B's dedicated**

battery. Fires planned during dedication, however, were monitored by the DS battalion FDC and are available for use by any of the TF 1-10 FISTs.

The FSO contacts the DS battalion FDC and plans a 10-minute smokescreen 600 m long to conceal Company Team A's movement across the open area to **CP 15**. Company Team B FIST chief calls for smoke on Targets AA2170 and AA2277.

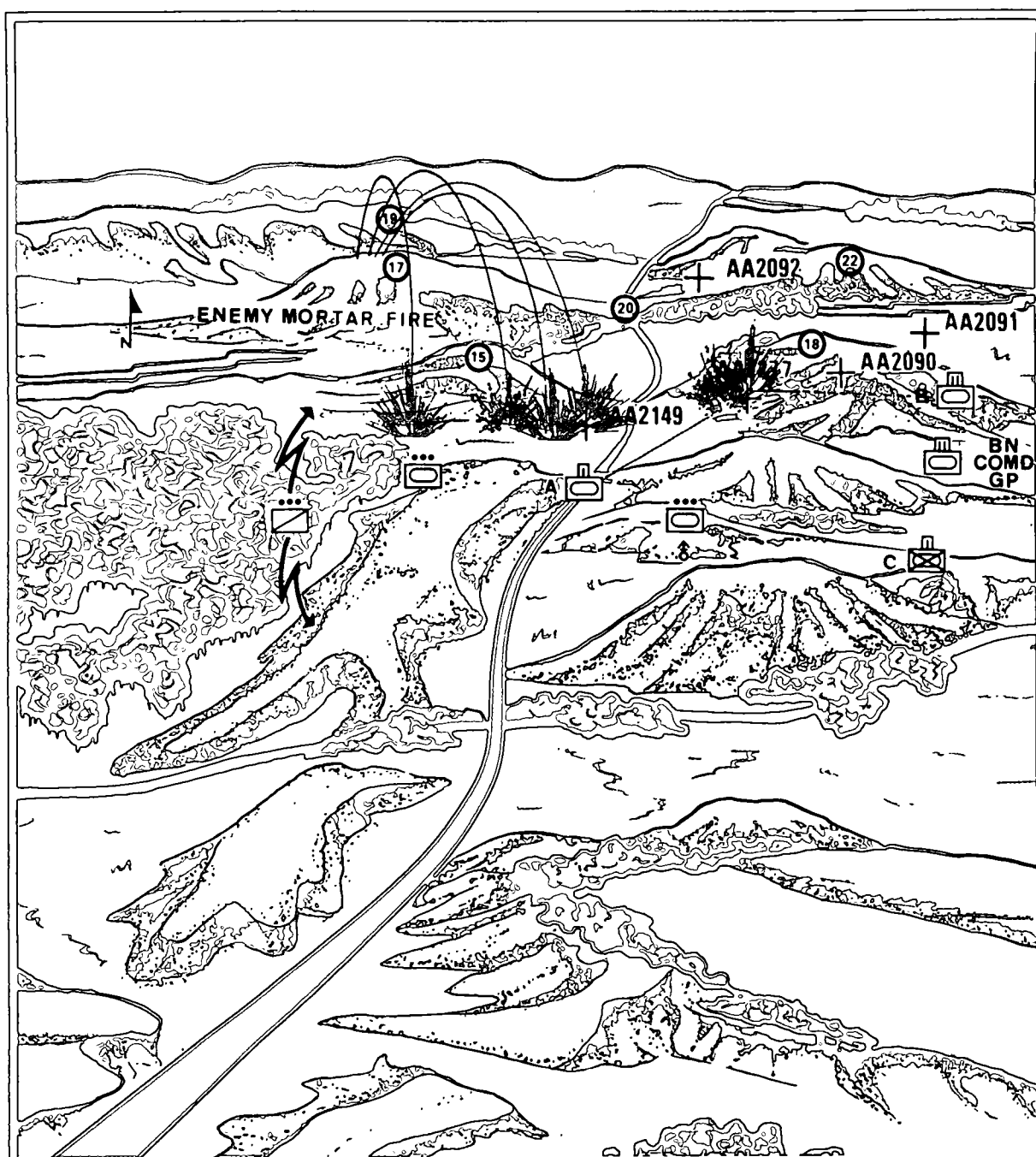


Company Team A moves toward CP 15 under cover of the smokescreen controlled by Company Team A's FIST chief. Company Team B begins bounding to CP 18. As the smoke dissipates, both advancing company teams begin receiving heavy AT and machinegun fire from the woodline near CP 18. Both company teams return fire and Company Team A's FIST calls for suppressive fires (mortar smoke and HE) on Target AA2277. In spite of the suppression, the enemy continues to place effective fires on the advancing company teams.

The TF commander decides to conduct a hasty attack against what he believes to be a reinforced enemy platoon near CP 18. He decides to envelop from the east around CP 18 with Company Teams B and C. As the TF 1-10 hasty attack develops, the commander reports the situation to 1st Brigade and requests priority of FA fires. He also advises that his ALO is requesting air alert for a close air support mission to be used against expected armor reinforcements coming from the northeast. To insure that the

attack is adequately supported, the FSO:

- ☐ arranges to use FA to continue the smoke and HE on Target AA2277 to suppress enemy direct-fire gunners,
- ☐ plans on-call Target AA2090 (near CP 18) for later use in the objective area,
- ☐ plans on-call Targets AA2091 (east of CP 18) and AA2092 (west of CP 22) to disrupt any enemy reinforcement attempts,
- ☐ coordinates the new planned targets with all FIST chiefs, and
- ☐ coordinates with the ALO to insure that the airstrike is integrated with other fire support.



Company Team A continues to return fire and maneuvers a tank platoon forward under cover of FA fires on Target AA2149. As the remaining elements of Company Team

A maneuver toward **CP 20**, Company Teams B and C are in position to attack toward **CP 18**. Enemy mortar fires begin falling on Company Team A significantly interfering with the company

team's ability to move and aim direct fires. The Company Team A FIST chief requests "Immediate counterfire" through the DS battalion FDC to silence the mortars.



2

10-12 tanks moving south-west about 1,000 meters northwest of **CP 22**. The close air support mission previously requested to attack such a unit is still about 10 minutes out. The battalion FSO monitors the FA AOBSR report of this enemy movement and requests the DS FA battalion to prepare to fire all available FA HE-VT and DPICM on the column. The FA AOBSR team will control the mission.



The FA AOBSR observes the column hugging the hill behind **CP 22** and begins his mission by requesting one battery volley 500 meters northeast of Target AA2092. It appears that the column will pass between the wooded area (near Target AA2092) and the hill. On the basis of this judgment, the

AOBSR calls for an on-call volley from another battery 400 meters east of Target AA2092. The AOBSR continues to adjust the two batteries along the route of movement of the tank column causing tanks to button up and slow significantly. (Previous smoke and dust from HE fires continue

to obscure vision from vicinity of **CP 22** and Target AA2078.)

Fires continue on the intercept point until aircraft begin their approach; the FA AOBSR team identifies the target for the aircraft. As the aircraft strike begins, the AOBSR shifts FA fires 400 m to the south. He **does not stop** FA fires.

The division main FSE, with input from corps, has identified enemy air defense targets requiring suppression for this mission. The division FSE passes these targets to division artillery, which fires the suppression missions in close coordination with the movement of the aircraft. The brigade ALO and FSO work together to feed aircraft movement information to division artillery to insure that the right targets are suppressed at the right time.

The aircraft complete their strike, destroying eight tanks; the remainder withdraw. During this time, Company Teams B and C have moved through **CP 18**, destroying enemy elements.

The task force prepares to continue the attack to the north to exploit its success. The battalion FSO shifts FA, HE, and smoke northeast of Target AA2078. Company Team A continues the attack

toward **CP 19** as Company Teams B and C move toward **CP 22**. Company Team A successfully gains terrain around **CP 19** and destroys the enemy mortar platoon east of the hill while Company Teams B and C occupy **CP 22**.

In the hasty attack:

- Fire support planning began early and was updated as the situation developed.
- Fires planned for the dedicated battery were used by TF after dedication was terminated.
- Smoke was employed to screen the advance of Company Team A.
- CAS aircraft were alerted as the attack began and in conjunction with FA effectively stopped a reinforcing tank column.
- Immediate counterfire was used to silence enemy mortars.

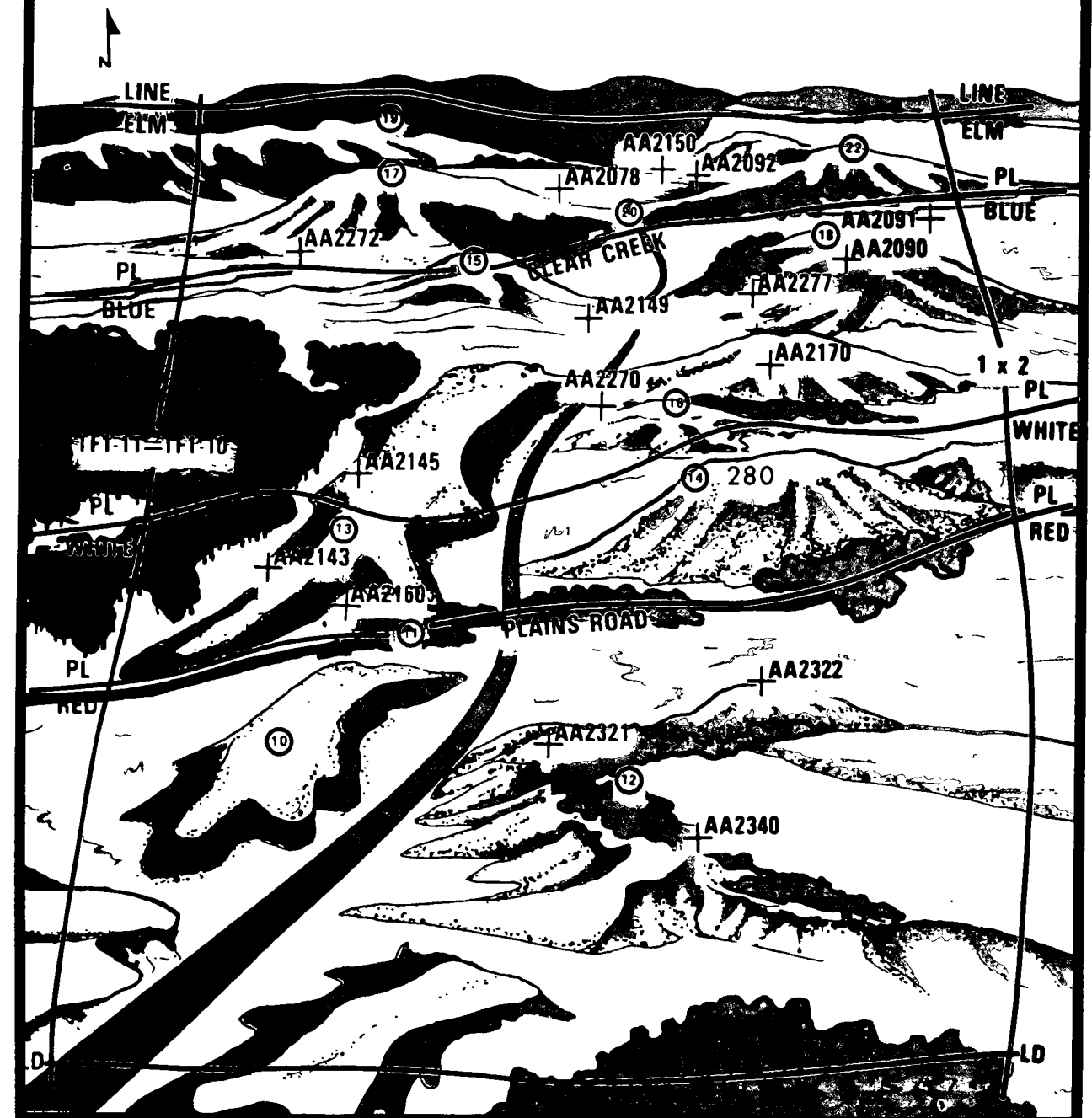
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Situation Continued...

While the TF 1-10, 1st Brigade, hasty attack was underway, TF 1-11 on the left ran into similar resistance. Elements of the 1st

Brigade were also confronted with *increased resistance* and the *momentum of the attack was significantly slowed*. On the basis of this situation and additional

intelligence, the division commander decided to take time to more fully develop the situation and conduct a deliberate attack. Supporting a division deliberate attack is discussed in paragraph 4-8.



4-8. How to Support a Deliberate Attack

Deliberate attacks normally are conducted by division or higher units. A force may be required to conduct a deliberate attack when it—

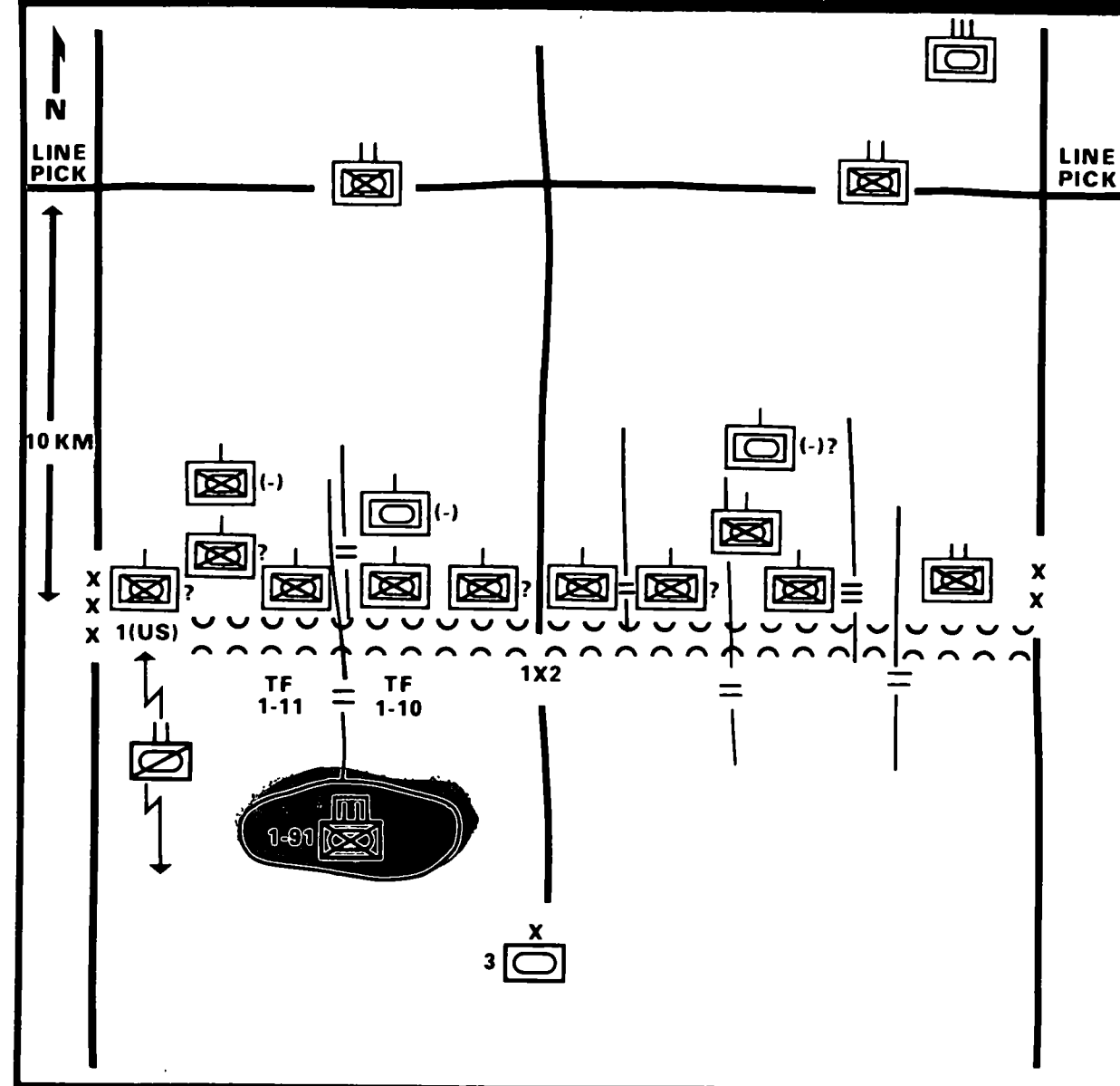
- encounters a strong enemy force in prepared defensive positions from the LD/LC, or
- is confronted with a major obstacle that cannot be breached with smaller unit hasty attacks.

When a deliberate attack is conducted, *time* is taken to carefully reconnoiter the area, gather detailed information on enemy forces and dispositions, and prepare detailed maneuver, fire support, deception, and electronic warfare plans.

Deliberate attacks concentrate forces and fires to *create a hole* in the enemy defenses and then rapidly push forces through to secure deep objectives in the enemy's rear area. *Well timed and coordinated fires must coincide with maneuver to negate enemy weapons effectiveness, isolate the penetration area, and fix enemy forces in place.* The commander sets priorities for suppression of targets and target areas.

The FSCOORD insures that indirect fires and close air support are immediately available and responsive to maneuver needs. Suppressive fires include massive use of FA and *mortar HE* and *smoke* to help gain momentum in the attack. Once the penetration is accomplished, heavy suppressive fires are planned on either side to help the penetrating force to secure deep objectives.

FIGURE 4-12. THE 23D ARMORED DIVISION DISPOSITIONS AND KNOWN ENEMY UNITS.



In supporting a division moving to contact example in paragraph 4-6, the US 23d Armored Division was attacking as a part of the I Corps offensive. As a result

of increased enemy resistance and additional intelligence on enemy strengths and dispositions, the division commander, with approval from corps, has decided to

conduct a deliberate attack to penetrate prepared defenses and continue to the north. Current disposition of the 23d Armored Division and known enemy units are shown in figure 4-12.

Commander's Concept for Fire Support. The division commander furnished the following concept to the FSCOORD:

"I want to concentrate as much fire support as possible to assist the 3d Brigade in their penetration. We've got a pretty good

idea how his defenses are laid out, and it will be no surprise that we're coming, so let's soften up those positions before the 3d Brigade hits them. After the penetration, flank protection is paramount en route to Line PICK—3d Brigade will need heavy suppression

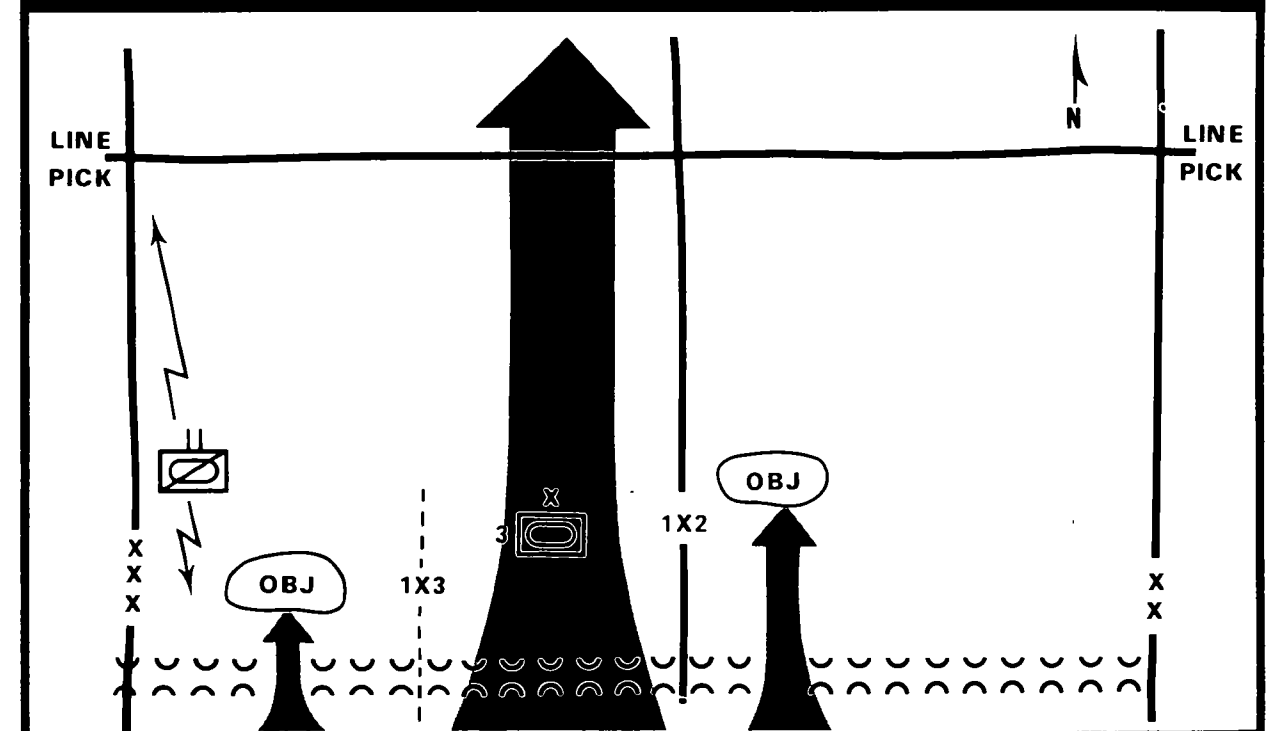
as they advance, particularly on the east. Use our air support carefully. Air priority goes to hitting enemy tank reserves. Elements of the enemy tank regiment northeast beyond Line PICK pose the greatest threat to our success. Watch for them."

The division's current mission is to attack to penetrate enemy positions on Line PICK and prepare to continue the attack or assist passage of the 24th Armored Division and follow and support the 24th Armored Division.

The division commander and his staff carefully evaluated the situation and options available. The weakest point in the enemy defense appears to be in the right portion of the 1st Brigade zone. In this area, the division is opposed by a widely dispersed motorized rifle battalion reinforced with tanks. Their positions are about 2.5–3 km deep. The second defensive belt is about 10 km from the LD/LC and consists of widely scattered motorized rifle elements reinforced with tanks. Primary reinforcements are elements of enemy division's tank regiment north of Line PICK and east of the 1st Brigade zone.

After war-gaming the course of action to determine the best way to attack, the commander refined his plan to provide the best application of the division's combat power. He will pass the 3d Brigade (three tank battalions and two mechanized infantry battalions) through 1st Brigade to break through on a 6-km front in the main attack to penetrate Line PICK. The 1st Brigade will support the passage and conduct a limited objective attack to fix enemy forces on the left flank to hold the left shoulder. The 2d Brigade will conduct a limited objective attack to fix enemy elements in zone and hold the right shoulder. The division cavalry squadron, attached to 3d Brigade, will follow 3d Brigade lead elements through the hole and move out to protect the left flank. The 1st Brigade will then follow and support 3d Brigade. A sketch of the division attack plan is shown in figure 4-13.

FIGURE 4-13. DIVISION ATTACK PLAN.

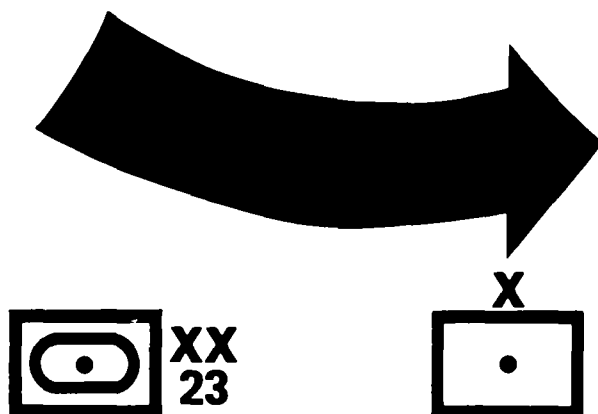


FSCOORD Activities. The FSCOORD for the division is the division artillery commander. From the war-gaming of possible courses of action and the commander's guidance, he formulated the following division-level fire support tasks for the deliberate attack:

- ☐ Weaken enemy defenses in the main attack zone. This will probably mean a preparation to be fired either on schedule or on call.
- ☐ Suppress key enemy forces to isolate and protect friendly forces making the penetration.
- ☐ Mass fires on critical locations after the attack has begun.
- ☐ Neutralize or destroy enemy reinforcing or counterattacking units.
- ☐ Degrade the effectiveness of enemy indirect fire.
- ☐ Suppress enemy air defense systems when required.

Fire Support Assets. Corps has distributed 58 CAS sorties per day to the division for the attack. Naval gunfire support is not available. The division has priority of nonnuclear fires from the corps Lance units. The division has its organic artillery battalions (three 155-mm SP and one 8-in SP) and has the same artillery brigade with which it moved to contact before (two 155-mm SP and two 8-in SP battalions).

Fire Support Organization.



ORGANIZATION FOR COMBAT

CAS. The FSCOORD recommends that division retain control of 18 sorties and suballocate 28 to 3d Brigade for the main attack and 12 to 2d Brigade for the supporting attack. This breakdown weights the main effort, provides adequate air for the supporting attack, and retains sufficient sorties at division to further weight the main effort or assist the 1st Brigade in its follow-and-support mission.

FA. There are several options available for organization of FA for the deliberate attack. All must result from changes to the organization for movement to contact.

Recall that FA organization for combat for the movement to contact was:

1-50 FA (155 SP): DS 1 Bde
 1-51 FA (155 SP): DS 2 Bde
 1-52 FA (155 SP): GSR 1-51 FA; O/O DS 3 Bde
 1-53 FA (8 SP): GS (2d priority to 1-22 Cav)

1-401 FA (155 SP): R 1-50 FA
 1-402 FA (155 SP): R 1-51 FA
 1-403 FA (8 SP): GSR 1-50 FA
 1-404 FA (8 SP): GS
 HHB, 101 FA Bde: Div arty alt

This option gives 3d Brigade (the main attack) two directly responsive FA battalions (1-52 and 1-401 FA) and two GSR battalions (1-53 and 1-403 FA) to support its attack.

Advantages:

Retains habitual relationship between the 3d Brigade and 1-52 FA battalion commanders. Leaves division artillery free

for counterfire, SEAD, and other general support tasks.

Disadvantages:

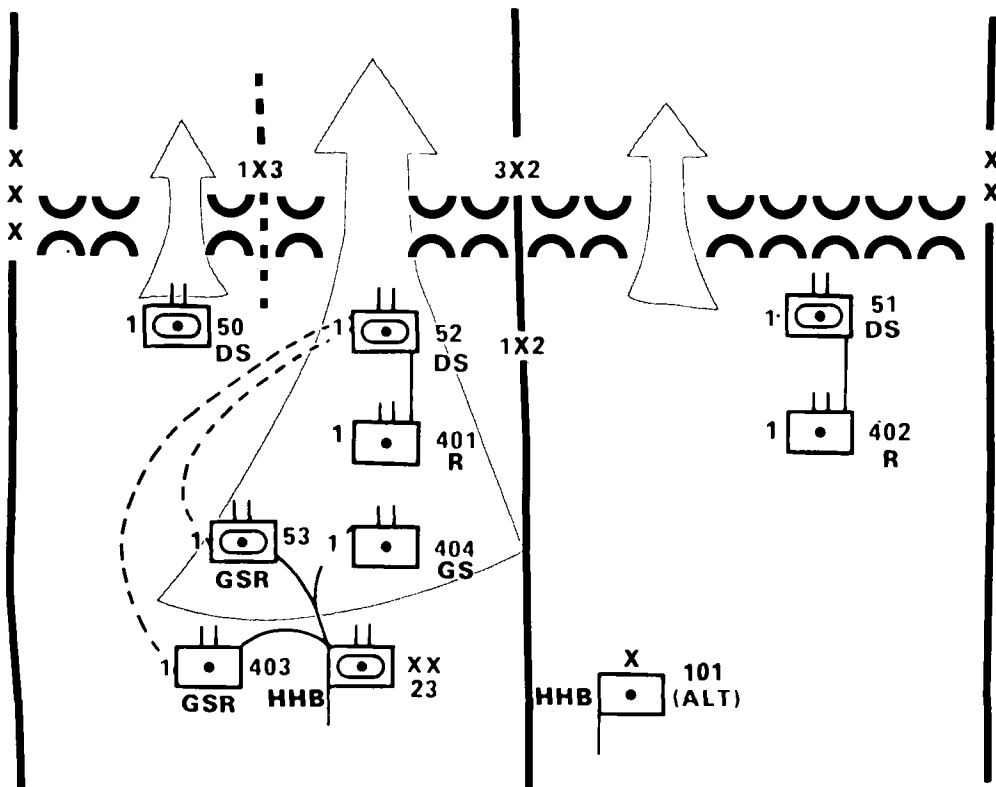
Makes inefficient use of the FA brigade HQ. Strain on DS battalion increases as the number of maneuver battalions in the main attack brigade increases. (In this case, there could be as many as six battalions in contact as the attack develops.)

FIELD ARTILLERY ORGANIZATION FOR COMBAT

FIELD ARTILLERY SUPPORT OPTION 1

1-50 FA (155 SP): DS 1 Bde
(1 Bde remains committed)
1-51 FA (155 SP): DS 2 Bde
1-52 FA (155 SP): DS 3 Bde
1-53 FA (8 SP): GSR 1-52 FA

1-401 FA (155 SP): R 1-52 FA
1-402 FA (155 SP): R 1-51 FA
1-403 FA (8 SP): GSR 1-52 FA
1-404 FA (8 SP): GS
FA bde HQ: Div arty alternate



Note: Diagram shows mission relationships, not positions.

This option gives the 3d Brigade three directly responsive FA battalions and a headquarters to control them.

Advantages:

FA brigade has command control facilities to do the job—good use of FA brigade HQ. Leaves division artillery free for counterfire, SEAD, and other general support tasks.

Disadvantages:

Alters habitual relationship between 3d Brigade and its DS battalion (1-50 FA).

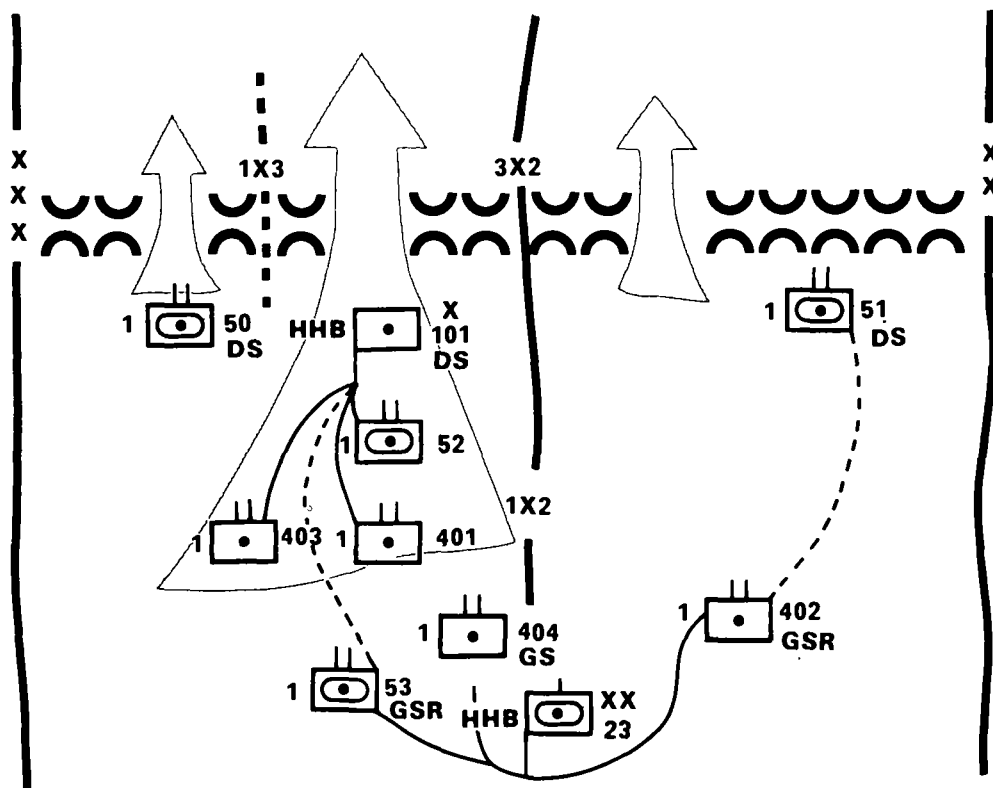
In this case, there is a large number (six) of maneuver battalions in the main attack, an FA brigade HQ is available, and there is time for the 3d Brigade commander and the FA brigade commander to plan the employment of fire support. Therefore, option 2, an FA brigade in DS to the 3d Brigade, is selected.

FIELD ARTILLERY ORGANIZATION FOR COMBAT

FIELD ARTILLERY SUPPORT OPTION 2

1-50 FA (155 SP): DS 1 Bde
1-51 FA (155 SP): DS 2 Bde
1-53 FA (8 SP): GSR FA bde
1-402 FA (155 SP): GSR 1-51 FA

1-404 FA (8 SP): GS
FA bde: DS 3 Bde
1-52 FA (155 SP)
1-401 FA (155 SP)
1-403 FA (8 SP)



Note: Diagram shows mission relationships, not positions.

Fire Support Planning. Division level fire planning is done in the division main FSE. In our example case, the division commander has accepted the FSCOORD's recommendation that a 10-minute preparation (including CAS and FA fires) be scheduled from H-5 to H+5.

Preparation length usually is determined by the division commander on the basis of the recommendation of his FSCOORD. The FSCOORD's recommendation is based on—

- ☐ number of targets;
- ☐ damage desired to each target;
- ☐ number of firing units (including FA, mortars, and CAS, when available);
- ☐ rate of fire; and
- ☐ availability of ammunition.

The Preparation. The preparation is an intense volume of prearranged fire used to soften enemy defenses before an attack. A preparation may be held on call or delivered at a predesignated time and in accordance with a prearranged time schedule. The force commander decides whether a preparation is warranted on the basis of the recommendation of his FSCOORD. Factors that influence the commander's decision include the following:

- ☐ Will the effect gained offset the loss of surprise?
- ☐ Have enough profitable targets been located to warrant a prep?
- ☐ Are the fire support resources available?
- ☐ Can the enemy recuperate before the fires can be exploited?

A preparation normally is phased to permit successive attacks on certain types of targets. The first phase attacks hostile fire support means and observation systems. The second phase targets command posts, communication facilities, assembly areas, and reserves. The final phase softens and suppresses first echelon defensive positions and other immediate threats. Preparations normally are planned by brigade or a higher echelon.

Fires normally start before attacking elements cross the LD (H-hour) and may continue after they have crossed.

The role of the FSCOORD in the preparation is to insure the coordinated attack of all targets considered critical by the maneuver commander at his echelon. He will do that by recommending what types of targets are attacked by which fire support means during each phase of the preparation. He must answer some hard questions:

- ☐ Will CAS be used in all phases of the preparation or will it be saved for phase II communications centers and armored reserves?
- ☐ Should NGF (when available) be scheduled in the preparation or used only against deep targets after the preparation is over?
- ☐ How will the DS battalions' fires be coordinated with the GSR and GS battalions' fires in the FA portion of the preparation?

(The FSCOORD at division must insure that the preparation is timely and coordinated and that all targets are attacked effectively; yet he probably does not wish to *dictate* to the DS FA units exactly *how* their fires are to be planned.) All these questions must be answered by the FSCOORD who—after consulting with the maneuver commander—gives each fire support agency its "mission" for the preparation.

As an example, a 10-minute preparation will begin at H-5.

FA. Division artillery TOC will schedule all GS and GSR battalions. FA fires will begin at H-5. Concentrate on phase I targets and phase II targets north of the DRY Creek. All division artillery units will fire phase III targets from H+3 to H+5 between BR 623609 and 626578. The division artillery TOC will coordinate all targets within brigade zones with DS units. Division artillery will leave one FA battalion free to schedule SEAD fires from H-1 to H+5. Targets will be furnished by FSE NLT 141300Z.

CAS. Strike to neutralize targets AA1901 and AA1926 (enemy tank reserves) from H+1 to H+5.

Field Artillery Fire Planning. In this case, the division commander has directed that division artillery coordinate the planning of the FA preparation. The FA brigade (as the 3d Bde's DS unit) will schedule the fires of its three battalions and will focus attention on targets in the penetration zone. Division artillery will plan the fires of the GS and GSR battalions and will be particularly concerned with counterfires, SEAD targets, command control centers, and fires on large troop concentrations deeper in the zone. If the FA portion of the preparation is to be *effective*, however, the division and all brigade fire plans must be coordinated—and division artillery has been tasked to do this.

Fires During the Attack. Fires to support 3d Brigade units in contact and the suppression fires to the flanks of the brigade as it moves to the objective will be planned and controlled by the FA brigade DS to the 3d Brigade.

Fires on the Objective. In this case, the 3d Brigade must *also* break through the enemy's *second* defensive belt. Fires will be required to assist this second penetration; however, its exact location will not be known until the brigade is well into its attack. In this case, the division FSCOORD has directed that the division artillery TOC plan and place on-call fires very similar to a preparation. Division artillery will have to begin planning these fires on each of several possible breakthrough zones in the second defensive belt. Targeting information will come from division and corps sources and from the brigade FSO. This will allow the FA brigade to keep its attention focused on the direct support of the 3d Brigade and yet insure that appropriate planning effort goes into the preparation at the second defensive belt.

Counterfire. Division artillery will manage the counterfire effort throughout the operation. Known enemy indirect-fire means will be targeted and attacked during the preparation. After that, fires on all enemy artillery will be planned as a part of the division artillery counterfire program. If and when the enemy's indirect firing hampers the attack, all of or portions of the counterfire program can be executed immediately.

SEAD. The FSCOORD recommends the same procedure for fires against enemy air defense weapons. Known locations will be attacked during the preparation. Subsequent attack may be made on enemy air defense units to support CAS and attack helicopter operations. The bulk of the SEAD targets will be provided by Air Force and aviation sources. Targets will be furnished by the Air Force combat intelligence center (CIC) and corps and division CEWI elements.

Close Air Support. Division will use eight of its preplanned sorties during the preparation to strike located tank reserves. All available aircraft will strike the enemy division tank regiment believed to be located beyond Line PICK when locations are confirmed. Following the commander's guidance, the assistant FSCOORD and Assistant G3 (for air) at the division main CP arrange to have CAS aircraft integrated into the attack. The ALO reports that one A-7 and one A-10 squadron will be supporting with 24 aircraft committed to the operation. Times are established for individual flight strikes on the basis of the projected maneuver movement. Ordnance will be loaded for the threat, approximately 50 percent antiarmor Maverick and Rockeye, and the remainder GP bombs and CBU.

Positioning of Fire Support. The FSCOORD recommends that the FA brigade's battalions move well forward during the night before the attack, and that they have priority of positions in the lateral band 3-6 km behind the FEBA. He indicates

that all batteries will be in place when the prep begins at H-5.

Fire Support Coordination. Corps has established an FSCL to expedite the attack of targets by CAS beyond that line. The division FSCOORD recommends that the division consolidate brigade CFLs (2 km forward of the LD) into a division CFL to expedite attack of targets beyond the CFL by mortar and FA fire. At H-hour, the 3d Brigade CFL will shift to a line just short of the second enemy defensive belt.

The division FSCOORD also recommends that division FSE clear all FASCAM fires to insure missions requested by one unit do not interfere with the mobility of other attacking forces.

In the division deliberate attack example:

- ☐ The FA brigade was used in direct support of the brigade making the division main attack.
- ☐ The planning of the FA portion of the division preparation was coordinated by the division artillery TOC.
- ☐ An on-call preparation was planned to aid penetration of the enemy *second* defensive belt.
- ☐ CAS was targeted primarily against enemy tank reserves.
- ☐ Brigade CFLs were consolidated into a division CFL to facilitate target attack through the division zone.
- ☐ Division artillery managed counterfire for the entire operation.

☐ **How to Support a Brigade Deliberate Attack**

Returning to the example attack, 3d Brigade (division reserve in the movement to contact) will conduct the division main attack through 1st Brigade to penetrate Line PICK and prepare to continue the attack or assist passage of the 24th Armored Division. The 3d Brigade will be concentrated on a narrow front so that it opposes elements of a reinforced motorized rifle battalion in the

main defensive belt and a reinforced motorized rifle company in the second defensive belt. The enemy division's major antitank reserve is located about 10 km beyond Line PICK near the 2d Brigade and 3d Brigade boundary. The 3d Brigade zone has good covered and concealed routes, yet provides sufficient opportunities to exploit range capabilities of direct-fire weapons. Effective overwatch positions can be established throughout the zone; however, the right portion is more heavily wooded initially, partially restricting observation and movement.

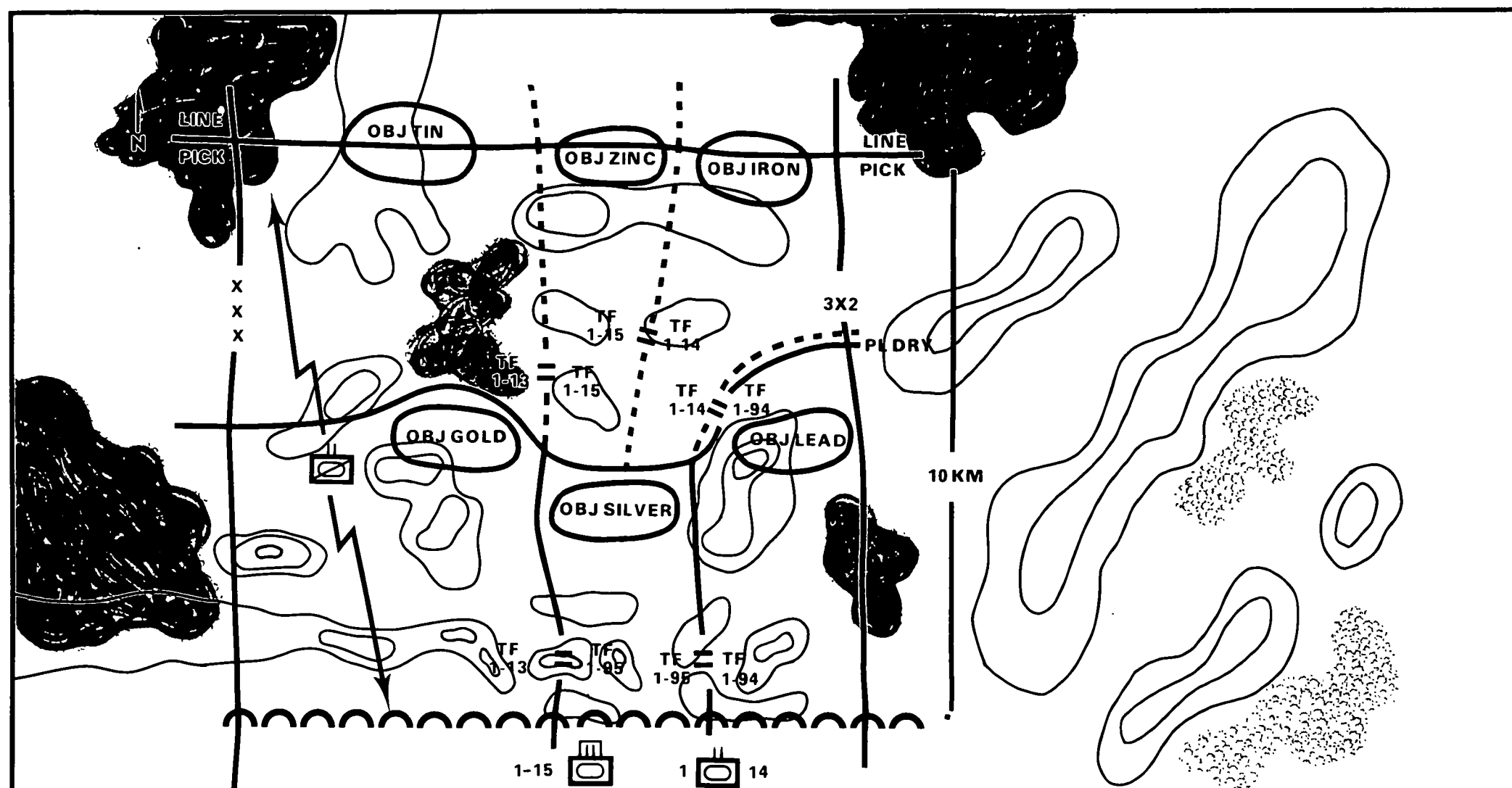
MANEUVER AND FIRE SUPPORT ASSETS

The brigade has been allocated the following major assets for this attack:

Tank battalions	- 3
Mech battalions	- 2
Cavalry squadron	- 1
Fire support	- 1 FA bde (two 155-mm bns and one 8-in bn) (DS) 28 CAS sorties
Mortars organic to battalion task forces.	
Engineers	- 1 company reinforced (DS)
ADA	- 1 Vulcan battery (DS)

After evaluating his mission and consulting with his staff (including the FSCOORD), the brigade commander decided to attack with three task forces abreast and one TF and one tank battalion in reserve. The cavalry squadron will protect the left flank. The brigade plan is as shown.





Brigade Commander's Concept and Guidance.

TF 1-13 Armor, TF 1-95 Mech, and TF 1-94 Mech attack to rupture enemy defenses and secure Objectives GOLD, SILVER, and LEAD, respectively. 1-22 Cav follows TF 1-13 initially; after the initial penetration, 1-22 Cav protects the left flank. As initial objectives are secure,

TF 1-15 Armor bypasses TF 1-95 on the left and TF 1-14 Armor (picking up one mech co from TF 1-94) bypasses TF 1-95 on the right to continue the attack to secure Objectives ZINC and IRON, respectively. On order, TF 1-13 continues the attack to secure Objective TIN. On order, brigade will continue the attack beyond Line PICK or assist passage of the 24th Armored Division.

Discussing fire support with his FSCOORD, the commander stressed these things:

"I know division is planning a preparation. We need to make sure those targets critical to our attack are covered. My first concern is enemy tank units and

ATGM positions in the main defensive belt, then command control facilities, mortars, and supporting artillery for that area. Next, make sure deeper reserves, especially tank units, are attacked. Coordinate closely with division artillery to get the most out of them. As we break through, we will need

extensive suppression to maintain our momentum. I want heavy suppressive fires, especially on our right flank, to move along with us. Be prepared to use scatterable mines against reinforcing units approaching from our flanks. Watch carefully for opportunities to use close air support on tank units."

FSCoord Activities. Normally, the FSCoord at the 3d Brigade is the commander of the 1-52 FA battalion. In this case, since the 101st FA Brigade has been given the mission of direct support of 3d Brigade, the brigade FSCoord is the 1-101st FA brigade commander. He will be assisted by the brigade's habitual FSO from the 1-52 FA battalion. This major will remain full time at the 3d Brigade's FSE. The commander, 1-52 FA, also will assist on a part-time basis at the FSE.

The brigade FSCoord has a very difficult task. He must rapidly take control of the three battalions now attached to the FA brigade and prepare to support the attack. The operation has been facilitated by the attachment of the brigade's habitual DS battalion (1-52 FA) to the FA brigade. Battalion FSOs and FIST chiefs will simply remain where they are. The FSCoord must insure that the fire support system functions smoothly during the attack. His operation in this case is quite complex, involving—

- ☐ accepting FS responsibility for the brigade zone,
- ☐ coordinating support of the passage of lines at the LC,
- ☐ support of up to six battalion-size units during the attack, and
- ☐ coordinating support of another passage of lines at Line PICK.

Fire Support Assets.

CAS. Division has distributed 28 CAS sorties to the 3d Brigade for the main attack. The 3d Brigade ALO has notified the FSCoord that an A-7 squadron will be flying most of the missions. Since the A-7 and the A-10 aircraft have radios compatible with Army FM sets, FIST chiefs can directly control airstrikes when necessary.

FA. The 3d Brigade has a field artillery brigade in direct support. The FA brigade contains two 155-mm battalions and one 8-in battalion. The 3d Brigade also has second priority on the fires of an additional 8-in battalion that is GSR to the FA brigade. The FA brigade also receives four FA AOBSR teams and two weapon-locating radars.

Fire Support Tasks. At brigade level, fire support must accomplish the following:

- ☐ Soften enemy defenses prior to the initial penetration.
- ☐ Support attacking units from the LD to the objective.
- ☐ Fire to fix, destroy, or neutralize local enemy reserves.
- ☐ Suppress fires from enemy overwatch forces.
- ☐ Deny enemy observation of supported operations.
- ☐ Soften enemy defensive positions on the objectives.
- ☐ Support the cavalry squadron attached to the brigade.
- ☐ Provide SEAD fires for friendly aircraft.

On the basis of the war-gaming process, the brigade commander's guidance, and the assets available, the FSCoord sets up his plan of fire support.

Fire Support Organization.

CAS. Division has distributed 28 CAS sorties to 3d Brigade. After war-gaming this attack, the brigade commander and FSCoord feel that this is not sufficient and they request eight more sorties. Four sorties are allocated to each committed battalion TF for planning purposes.

FA. The commander of the FA brigade chooses in this case *not* to subassign missions to his battalions. Instead, he will direct each of his 155-mm battalions to communicate directly with designated maneuver battalions. The 8-in battalion fires will augment the fires of the 155-mm battalions and attack targets of interest to the brigade commander. Priority of fires will go to TF 1-95 initially.

Fire Support Planning. For the preparation to be effective, it must be a coordinated effort. In this case, the division FSCoord is responsible for insuring that fires by the 101st FA brigade and the fires of the 23d Armored Division Artillery battalions are complementary. The brigade FSCoord will focus his fires on mortars, company and battalion command control facilities, and assembly areas and frontline defenses. The fires planned by division will be oriented more toward enemy field artillery, observation posts, battalion and regimental CPs, assembly areas, and defensive positions deeper in the brigade zone. ALL fire support assets, however, will focus on the enemy frontline elements in the breakthrough zone during the last part of the preparation.

Positioning of Fire Support. In this case, the FA brigade commander will position all three of his battalions. Units will be placed as far forward as possible and movement will be by echelon—so that continuous FA fires are maintained. Batteries in battalions should be from 2 to 5 kilometers apart with cover, concealment, protection, and ease of entrance and exit being the primary considerations for position selection. Priority of field artillery positions within the brigade zone goes to the three battalions of the FA brigade.

Fire Support Coordination Measures. The FSCoord recommends that the 3d Brigade establish a CFL 2 km beyond the

LD. At H-hour, the CFL will shift to a line just short of the second enemy defensive belt. As the brigade nears the enemy second belt, the CFL will be shifted beyond those positions. When the penetration of the second belt occurs and the exploitation begins, the CFL is moved about 10 km deeper into the enemy zone.

The FSCoord must coordinate the fire support for two passages of lines if the operation goes according to plan. The first will take place when the 3d Brigade attacks through the 1st Brigade. The second—a contingency—will take place at Line PICK if the corps reserve armored division is passed through at that point.

In a forward passage of lines, the moving FSCoord (in this case the FA brigade commander) must take over the fire support responsibility for the zone of the attack. Fire support responsibilities usually pass to the new FSCoord at the same time the moving maneuver commander takes responsibility for the zone. This usually occurs prior to the actual passage. As soon as a confirming order is received that a passage may take place, the moving force immediately establishes liaison with the stationary force.

The deliberate attack frequently involves a division-size forward passage of lines—the movement of a division through a portion of a zone occupied by a division on line. Division passages during deliberate attacks are more thoroughly planned and more highly controlled than passages preceding exploitations. Both operations, however, present very complex fire support problems and they share the following considerations:

- Forward passages are not a stop and pass through action; rather, they are a continuous forward pressure operation.
- The new FSCoord is concerned with existing targets and fire support plans. He plans fires to support the moving force primarily on the basis of the targeting information provided by the stationary force.

FIRE SUPPORT COORDINATION FOR A FORWARD PASSAGE OF LINES IS DETAILED AND EXTENSIVE. THIS PREVENTS ANY DEGRADATION OF FIRE SUPPORT DURING THE PASSAGE AND ASSISTS IN MAINTAINING THE MOMENTUM OF THE ATTACK.

He insures that his fire support operations do not impair the fire support needs of the stationary force immediately preceding and during the passage.

□ During the passage of lines, the FA of the stationary force may be attached to the moving force or remain under the parent control headquarters and, from positions occupied to support the passage, augment the fires of the moving force FA until the supported force moves out of range.

□ Other considerations for the new FSCoord include:

existing fire support, survey, and communications;

OPs and other target acquisition assets on hand;

available firing positions and cover and concealment;

fire support SOPs in effect;

target priorities; and

enemy capabilities.

Like other units involved in the passage process, fire support units observe strict OPSEC measures to insure surprise. Radio listening silence, terrain marches, covered and concealed routes, and limited registrations aid in maintaining surprise.

Planned fire support may be augmented by fire support from the stationary force. The amount of this outside support must be agreed on early in the planning phase, and communication links must be established to insure the responsiveness of this support.

Concerned personnel (FOs/FIST chiefs/FSOs) must know at all times where and over which nets to request support. They must also be kept aware of changes in the fire support situation.

Counterfire operations take on greater importance because of the increased vulnerability of massed friendly forces and the need to suppress hostile indirect-fire weapons during such massing.

Initially, the FA should be positioned well forward. The DS and reinforcing battalions of the moving force are positioned near movement routes for the passage.

In the brigade's planning for the deliberate attack:

□ The FSO planned fires on enemy tank and ATGM positions, on command control facilities, and on enemy indirect-fire weapons.

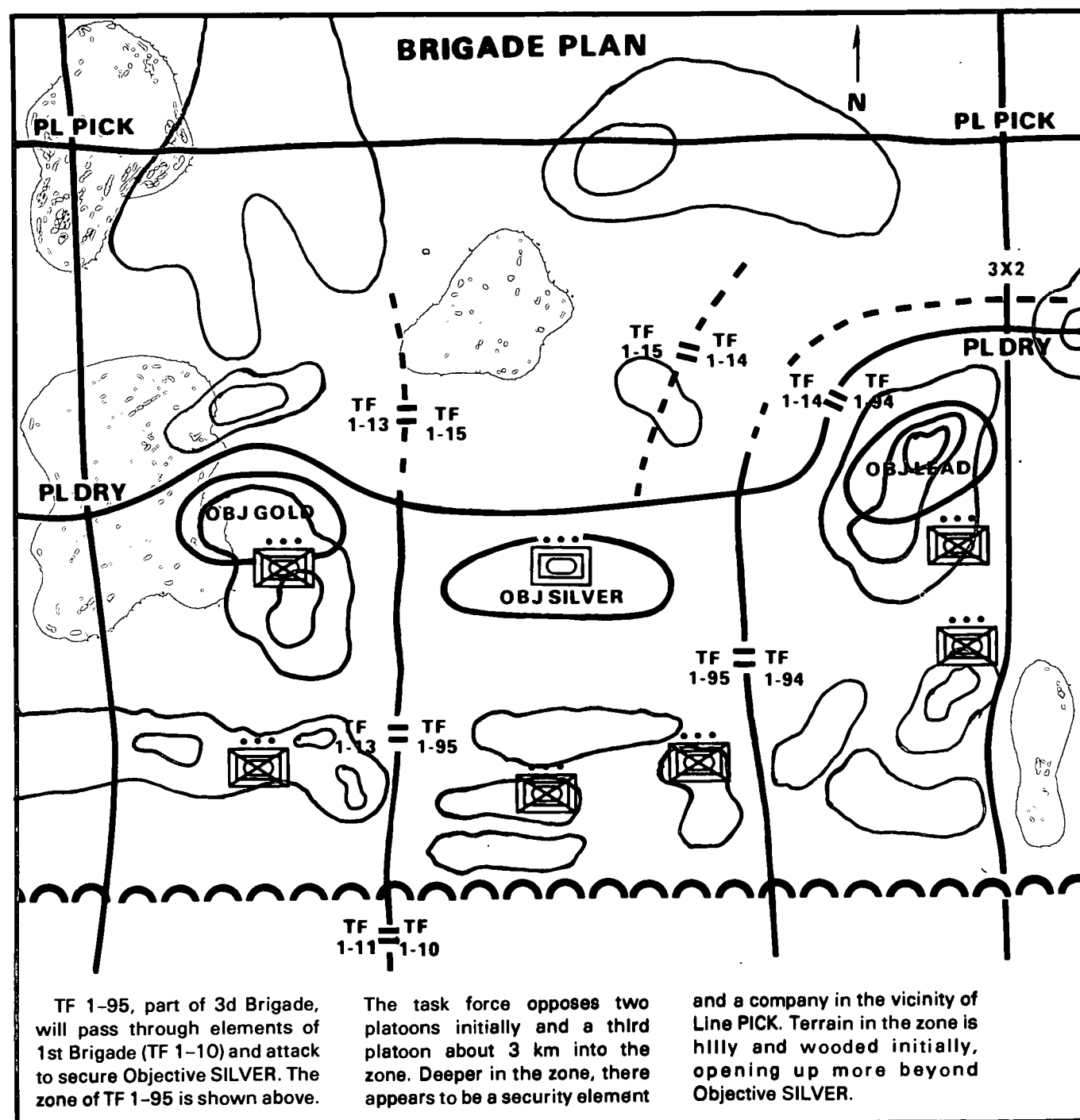
□ The 101st FA brigade controlled DS FA for the 3d Brigade attack.

□ Priority for FA positions went to the FA brigade FA battalions.

□ Brigade and battalion FSOs planned for two forward passages of lines.

Fire support coordination for a forward passage of lines is detailed and extensive. This prevents any degradation of fire support during the passage and assists in maintaining the momentum of the attack.

□ **How to Support a
Battalion Task Force
Deliberate Attack**



TASK FORCE ORGANIZATION

Major assets available to the task force include:

**MECHANIZED TASK FORCE
ORGANIZATION**

2 mech co (2 TOWs ea)
1 tank co
Cbt spt co (less 4 TOWs)

**FIRE SUPPORT
ORGANIZATION FOR COMBAT**

1 battalion mortar platoon
2 company mortar sections
Priority of fires from 1-52 FA (155 SP)
4 CAS sorties

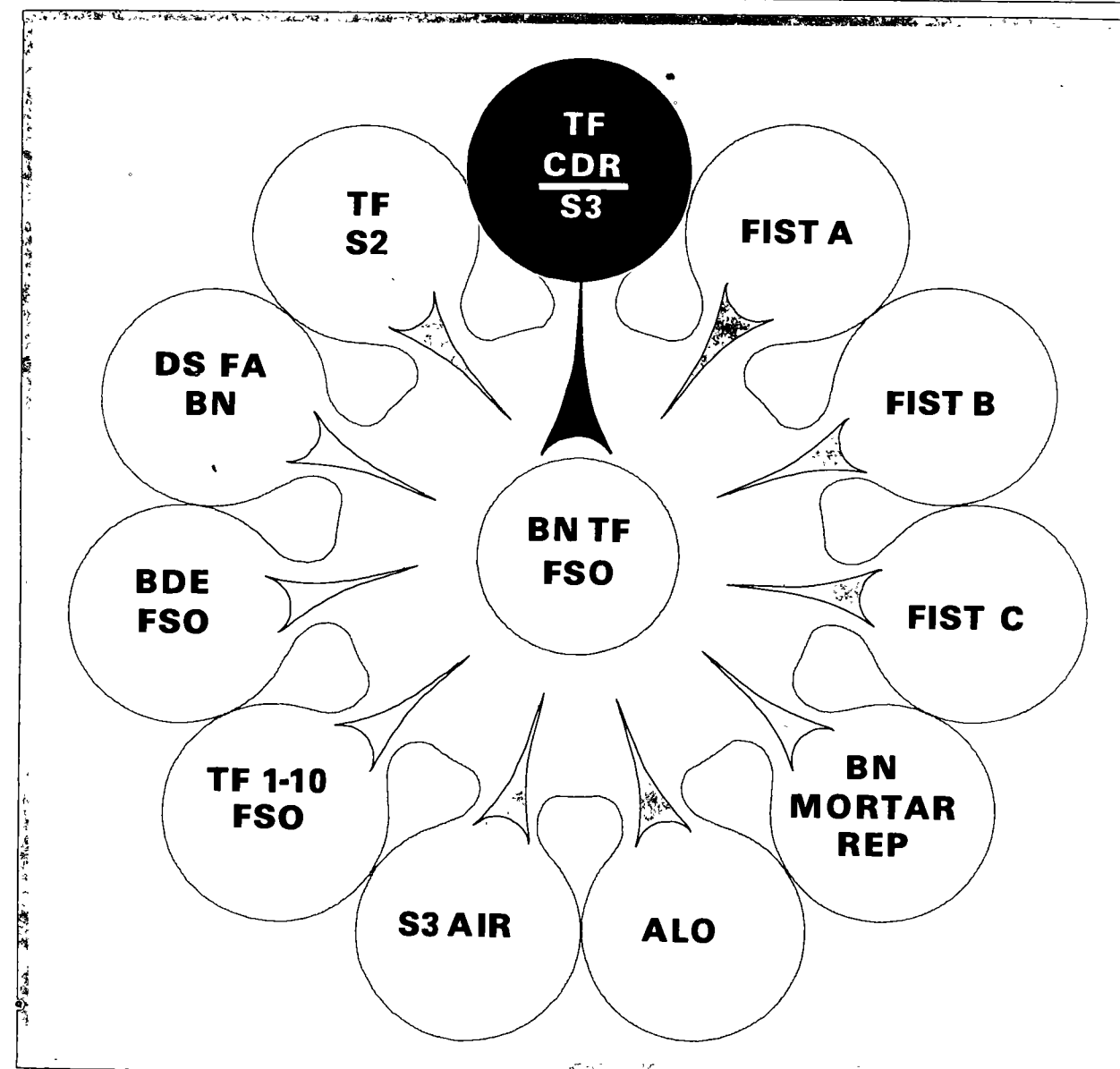
ENGINEERS:

1 platoon (DS)

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FSCOORD Activities. The FSCOORD for the battalion TF is the FSO from 1-52 FA battalion. His contacts in the planning and coordination of FS for the deliberate attack are shown in figure 4-14.

FIGURE 4-14. TF FSO FIRE SUPPORT CONTACTS.



When the commander received his mission and began his planning, he went to the TF 1-10 CP with his S2, S3, and FSO to coordinate their passage of lines and gain information on the enemy and zone of action. The two task force FSOs discussed target information and fire plans currently in existence. They also discussed the use of TF 1-10 mortars to supplement fires available to TF 1-95 during the passage. Then the TF 1-95 command group moved to a forward OP for a visual reconnaissance. On the OP, the TF 1-10 (stationary unit) S2 briefs them on the terrain, the best avenues of approach, and the enemy. The TF 1-95 commander evaluates this information, further analyzes his mission in that light, and asks the FSO to update him on the brigade fire support plan:

The FSO's fire support planning for the deliberate attack will be similar to that for the hasty attack except that his plan will be more thorough. In this case, he also will have to coordinate a forward passage of lines and provide targets for the preparation.

FSO: "The brigade has 28 CAS sorties and has asked for 4 more. They plan to use eight of these to hit the main defensive belt early in the prep. Brigade has suballocated us four sorties and we may get more if the additional CAS request is approved.

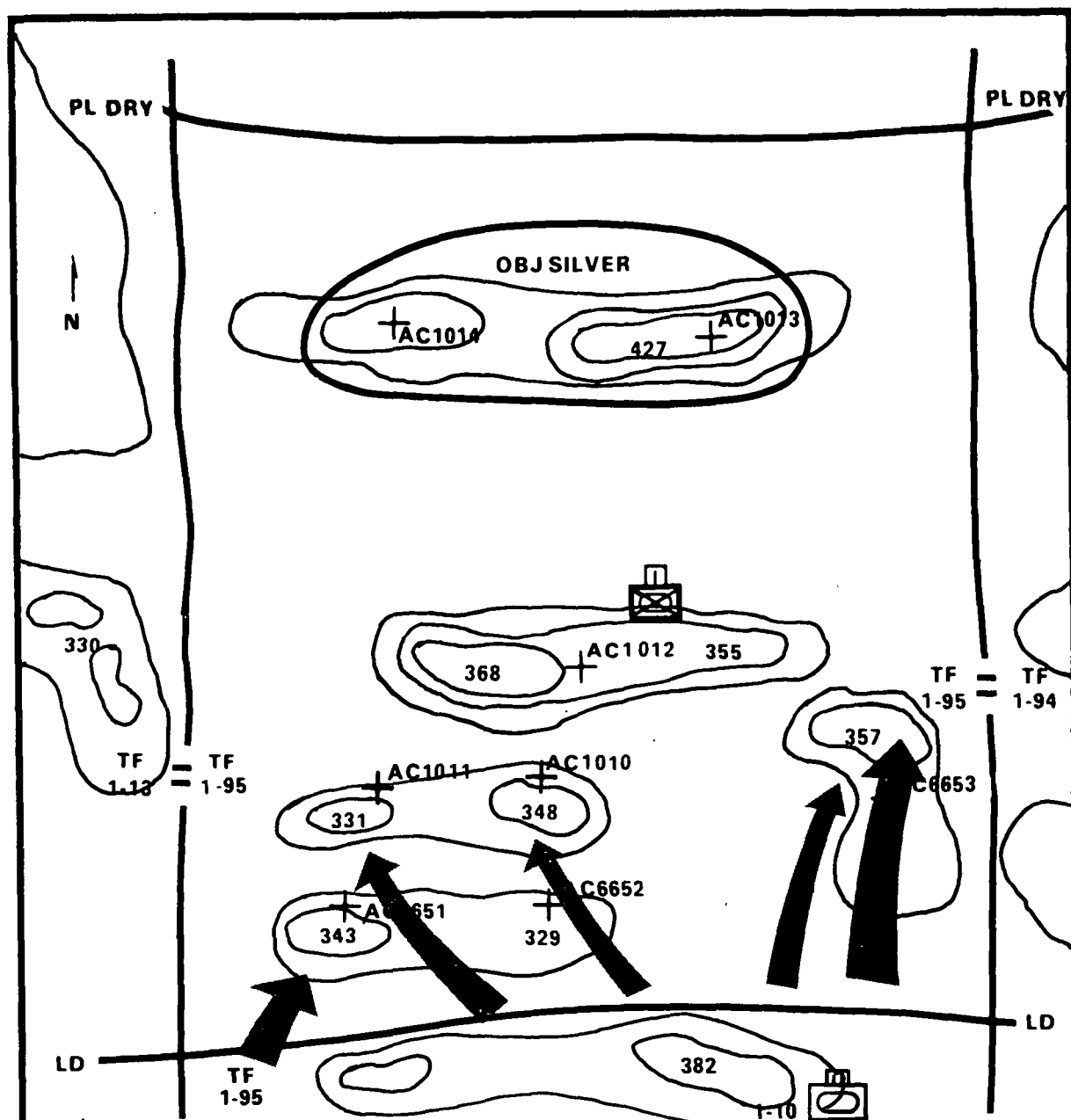
"The 101st FA Brigade is DS to the 3d Brigade and it has the 1-52 FA battalion and the 1-401 FA (both are 155-mm). In addition, it has one battalion of 8-inch howitzers (the 1-403 FA). Additionally, it has 2d priority on the fires of the 1-53 FA (another 8-inch howitzer battalion). Our task force has priority of fires from the 1-52 FA. Our fire requests go directly to their FDC.

"The division prep will be fired from H-5 to H+5. Brigade has already targeted the enemy

positions we requested on the first and second ridgelines. They'll be fired late in the prep.

"It looks like we'll be in range of three enemy FA battalions—two 122-mm and one 152-mm. He also has some mortars behind Hill 368. The prep will attack his artillery, mortars, and OPs in the first phase. Fires will then shift to his command control elements on the second and fourth ridgelines. At H+1, the fires will shift to his frontline defensive positions and end with a TOT on Hills 343 and 329."

The commander, S3, and FSO then studied the overall situation to determine the best course of action for the attack. As a result of the commander's estimate, a four-step attack was developed.

FIGURE 4-15. FIRST STEP OF TF DELIBERATE ATTACK.

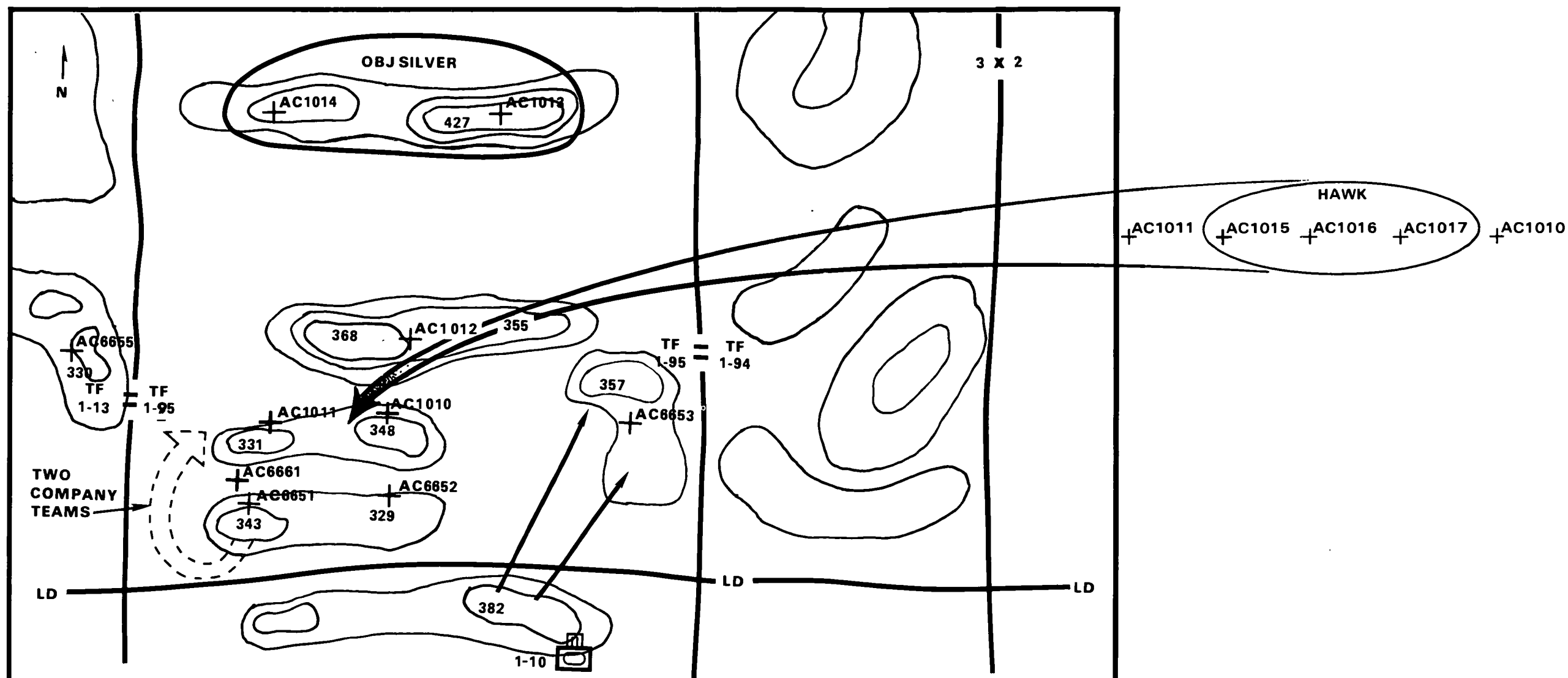
In step 1 (fig 4-15) the task force crosses the line of departure moving to Hill 343, overwatched by TF 1-10 elements. Suppressive direct fires from TF 1-10 hit Hill 343-329 and Hill 357. Targets sent down from brigade include

AC1010-AC1014. As a result of his initial input to the preparation and subsequent war-gaming, the battalion commander established Targets AC6651 through AC6653.

TF 1-95 will reach the base of Hill 343 just as the final rounds

of the preparation are falling. The FSO will then continue to fire suppressive smoke and HE fires will be shifted to fire suppression on Hill 348. Battalion mortars will suppress enemy gunners on Hill 357 throughout step 1.

FIGURE 4-16. SECOND STEP OF TF DELIBERATE ATTACK.



In step 2 (fig 4-16), one company team on Hill 329 will provide suppressive fires on Hill 348 as TF 1-10 continues to suppress forces on Hill 357 (Target AC6653). Two company teams will move around the left to envelop Hill 348 from the west. Suppression of forces

on Hill 357 will continue with battalion mortars.

Smoke is planned north and south of Target AC6661 to screen the envelopment. Smoke is also planned on Target AC6655 in TF 1-13 zone to obscure that area if TF 1-13 has not secured Hill

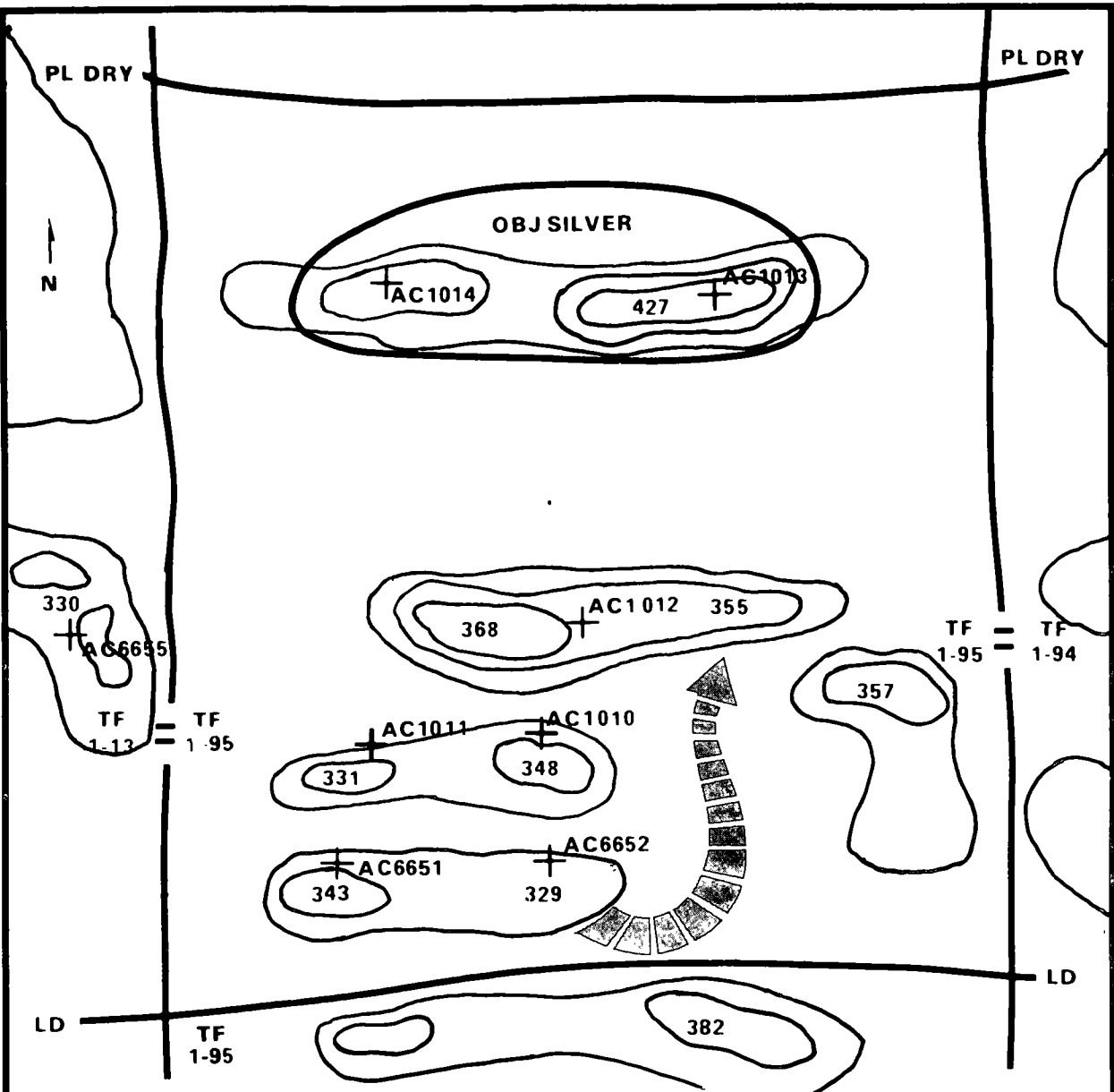
330. If the smoke is required, TF 1-95 FSO will coordinate directly with TF 1-13 FSO to clear the fires, insure friendly troop safety, and avoid interference with TF 1-13 operations.

Series HAWK is planned along the ridge between Hills 331 and 348 by adding three

targets between AC1011 and AC1010. These will be phased from left to right to support the company teams enveloping from the left. The *entire* series can be fired or targets can be engaged separately. After seizure of Hill 348, fires will be shifted to Hill 368 for suppression.

FOLD OUT FOR
PAGE 4-55 WITH FIGURE 4-16.

FIGURE 4-17. THIRD STEP OF TF DELIBERATE ATTACK.

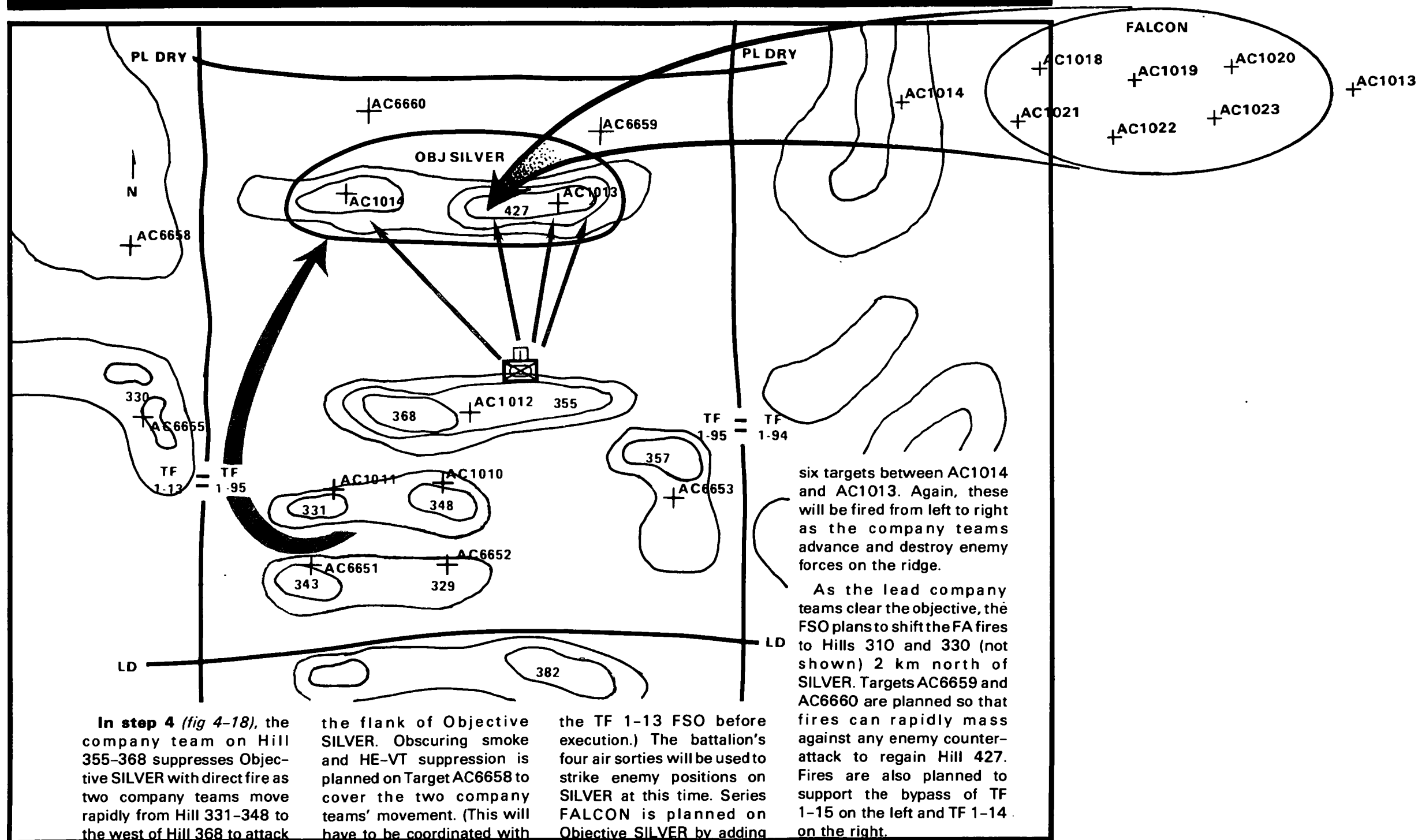


Step 3 (fig 4-17) continues direct-fire suppression from TF 1-10 on Hill 357. TF 1-95 has two company teams suppress Hills 355 and 357 from Hill 348. The company team on Hill 329

attacks through the valley to Hill 355-368.

Heavy obscuring smoke is planned on Hill 357 to cover this movement. At the same time, enemy positions on

Hills 368 and 355 are suppressed by battalion mortars and field artillery fires. Suppressive fires on Hill 355 will be shifted to Objective SILVER (Targets AC1013 and AC1014) at the last minute.

FIGURE 4-18. FOURTH STEP OF TF DELIBERATE ATTACK.

**FOLD OUT FOR
PAGE 4-57 WITH FIGURE 4-18.**

**IN THE EXPLOITATION, THE SPEED
AND DECENTRALIZED EXECUTION OF
COMBAT OPERATIONS DEMAND GREAT
FLEXIBILITY FROM THE FIRE SUPPORT
SYSTEM. THIS MAKES THE FSCoord's
JOB EVEN MORE COMPLEX
AND DEMANDING.**

In the battalion task force deliberate attack:

- ☐ Series HAWK and a smokescreen were planned to support the two enveloping co teams of TF 1-95.
- ☐ Obscuring smoke was used to facilitate movement of an attacking company team.
- ☐ Mortars, FA, and CAS were simultaneously employed on a task force objective.
- ☐ TF 1-95 FSO coordinated directly with adjacent FSOs to insure timely attack of targets out of zone.

4-9. How to Support an Exploitation

☐ **Employment of Forces in The Exploitation**

If an attack succeeds, friendly forces normally exploit to follow up initial gains. The exploitation is conducted to destroy the enemy's ability to reconstitute his defenses or conduct an orderly withdrawal. An exploitation normally begins when the main enemy defenses are penetrated and the enemy is having recognizable difficulty maintaining his positions. The penetrating force usually holds the shoulders of the penetration while fresh forces pass through to exploit.

Exploiting forces strike swiftly to deep objectives to cut lines of communication and surround and destroy enemy reserves. The exploitation resembles, to some degree, the movement to contact with very decentralized execution, meeting engagements, freedom of action, and speed. Forces advance on a broad front with maximum forces forward. Small reserves are retained to insure flexibility of operation, momentum of the advance, and minimum essential security.

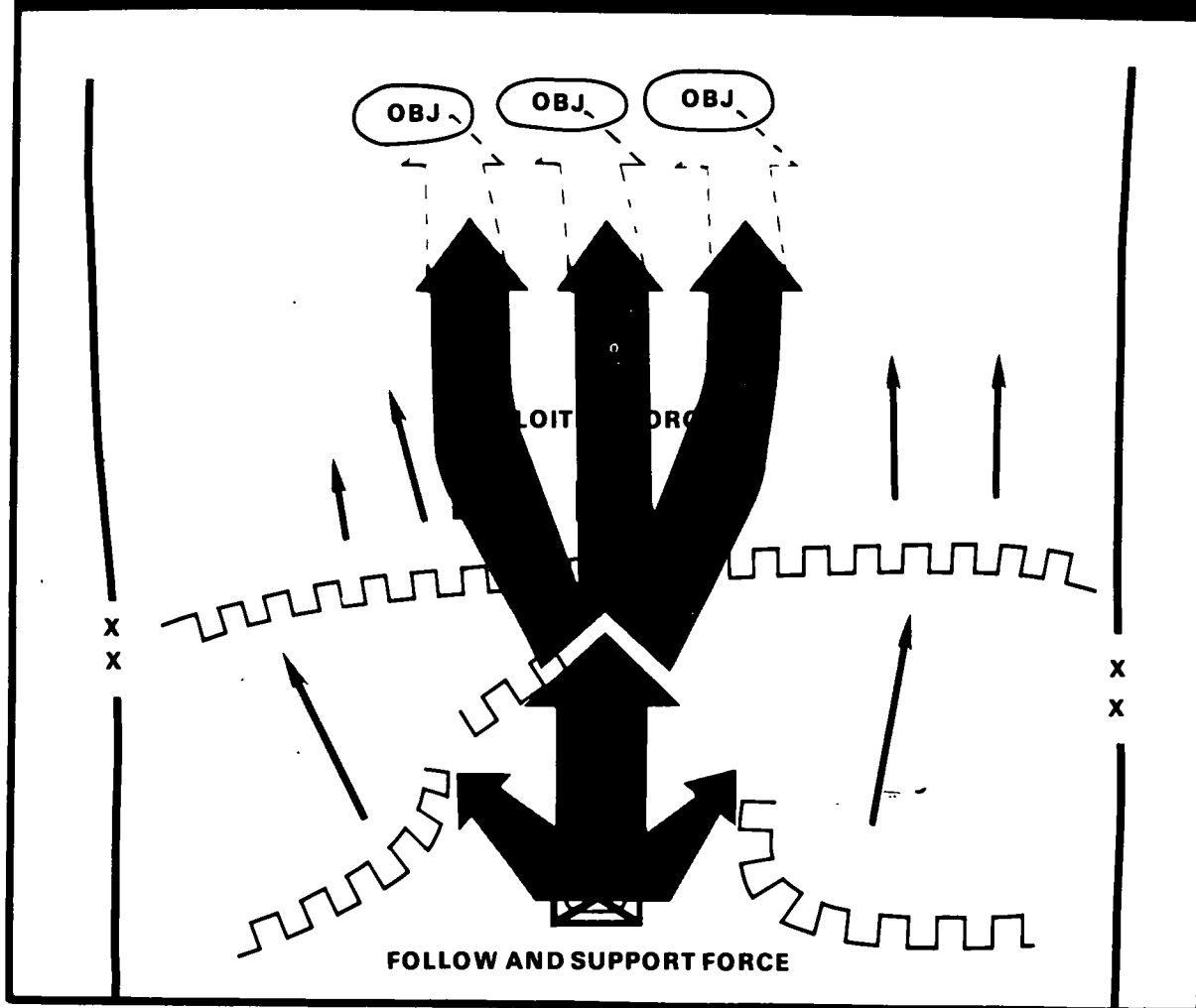
An exploiting force clears only as much of the assigned zone as necessary to permit its advance to continue. Enemy forces that interfere or are capable of interfering with the movement of exploiting forces are destroyed.

Others are bypassed and reported to higher headquarters. Occasionally, some forces may remain to fix enemy pockets of resistance until the exploiting force is relieved by follow and support forces.

Follow and support forces assist the exploiting force by securing lines of communication, relieving fixing forces,

mopping up bypassed pockets of resistance, expanding the area of exploitation, or blocking enemy reinforcements. Follow and support forces, as mobile as exploiting forces, stay well forward to assist. Close liaison is established between the follow and support commander and the exploiting commander to enhance cooperation and responsiveness (fig 4-19).

FIGURE 4-19. EXPLOITING AND FOLLOW AND SUPPORT FORCES.



□ **How to Support a Division in the Exploitation**

Exploitations normally involve a force of at least division size. In a typical example, a reserve division would be passed through a newly created penetration and would drive aggressively toward objectives deep in the enemy's rear. Normally, another division would follow and support the exploiting force.

FSCOORD Activities. The FSCOORD of the exploiting division is the division artillery commander. His job is quite complex and involves:

- Constant coordination with the FSCOORD of the follow and support division to identify bypassed enemy elements and pass fire support tasks.
- Anticipation of situations that would require rapid transition to more centralized support of concentrating division elements making a hasty or deliberate attack.
- Insuring ammunition, supplies, and maintenance required are thrust forward with exploiting fire support means.

Once the brigades begin their exploitation, the division's need for highly centralized control and deliberately planned mass fires decreases. There is an increase, however, in the need for highly mobile, flexible fire support responsive to the needs of the exploiting brigades.

Fire support tasks for an exploitation include:

- Suppression of bypassed pockets of resistance.
- Support of maneuver units which temporarily drop out to "fix" enemy forces in a pocket of resistance.
- Support of battalion, brigade, and division hasty attacks overcoming resistance that cannot be bypassed.

- Fires to slow or destroy counterattacking enemy forces.

Both FA and CAS must accomplish these tasks in the exploitation.

The exploiting division should be given as many CAS sorties as corps can afford. CAS is *well suited* for the exploitation.

- It can operate effectively in a situation when the enemy's defense (and *air* defense) structure is crumbling.
- It can deliver *massive* amounts of ordnance *quickly* throughout the battle area.
- It is not limited by being positioned in one place when it is needed in another.
- It can seek out, follow, and destroy the withdrawing enemy.
- Unlike FA *with* the exploiting force, refueling and ammunition resupply of CAS aircraft place no logistical burden on the exploiting unit. Close air support can be effectively preplanned for the early stage of the exploitation and for the final seizure of the brigades' exploitation objectives. In between these points, however, preplanning will be difficult and CAS sorties will be used primarily against large, fleeting targets of opportunity.

Fire Support Organization. The four FA battalions organic to the mechanized or armored division (three 155-mm and one 8-in battalions) and an attached four-battalion FA brigade (example: two 155-mm and two 8-in battalions) would be ample field artillery to support an exploiting division.

There are two options for organizing FA to support an exploiting force. Each is based primarily on distance, command control capability, and speed of the operation.

If the distance between lead elements and division artillery is not too great to prevent direct communications and positive control,

and the lead elements are not moving too fast for division artillery to maintain control, then standard tactical missions of DS, R, and GSR should provide adequate response to exploiting forces.

Each committed brigade (all three brigades may be committed) will receive a DS battalion and usually a reinforcing battalion. If forces in action in one of the zones moves faster, GSR missions may be given to add weight to that effort. Usually one or two battalions will remain in GS to support the division as a whole and provide responsive counterfire.

If distance from division artillery to lead elements is great, direct communications and control are difficult, or lead elements are outdistancing higher headquarters, normal DS and reinforcing battalions usually will be attached to exploiting brigades. In this case, an FA battalion group can be formed and attached. This is most likely to occur as the exploiting force expands its area of operations deep in the enemy rear.

When the exploiting brigade encounters a pocket of resistance that it can bypass, it may be necessary for field artillery with the exploiting force to place continuous suppression fires on the enemy forces until the brigade is safely past. In other situations, the exploiting brigade may have to leave a battalion TF in position to "fix" the bypassed enemy force while the exploitation continues. The FSCOORD with the exploiting brigade must then arrange for fire support for the stay-behind TF until either the follow and support division arrives or a GS or GSR FA battalion from the exploiting division's division artillery assumes the mission.

Fire planning for the exploitation may be fairly detailed for the first several kilometers beyond the penetration zone. After that point, however, exploitation fire planning will be

hasty and informal—orienting on rapid attack of targets of opportunity. It will be done primarily by battalion FSOs and FIST chiefs.

FSCOORDs at brigade and division levels, however, must continually anticipate and plan for hasty attacks in case major resistance that cannot be bypassed is encountered.

Positioning. The commander of the DS FA battalion will position DS, attached, or reinforcing artillery. Because of the speed inherent in an exploitation, positioning of FA is an extremely challenging operation. In the brigades with more than one supporting FA battalion, it will be easy to always have a unit in position ready to fire. In brigades with only one FA battalion, it will be necessary to leapfrog batteries to insure continuous and adequate FA support. The supporting FA must have mobility equal to or greater than that of the supported exploiting force.

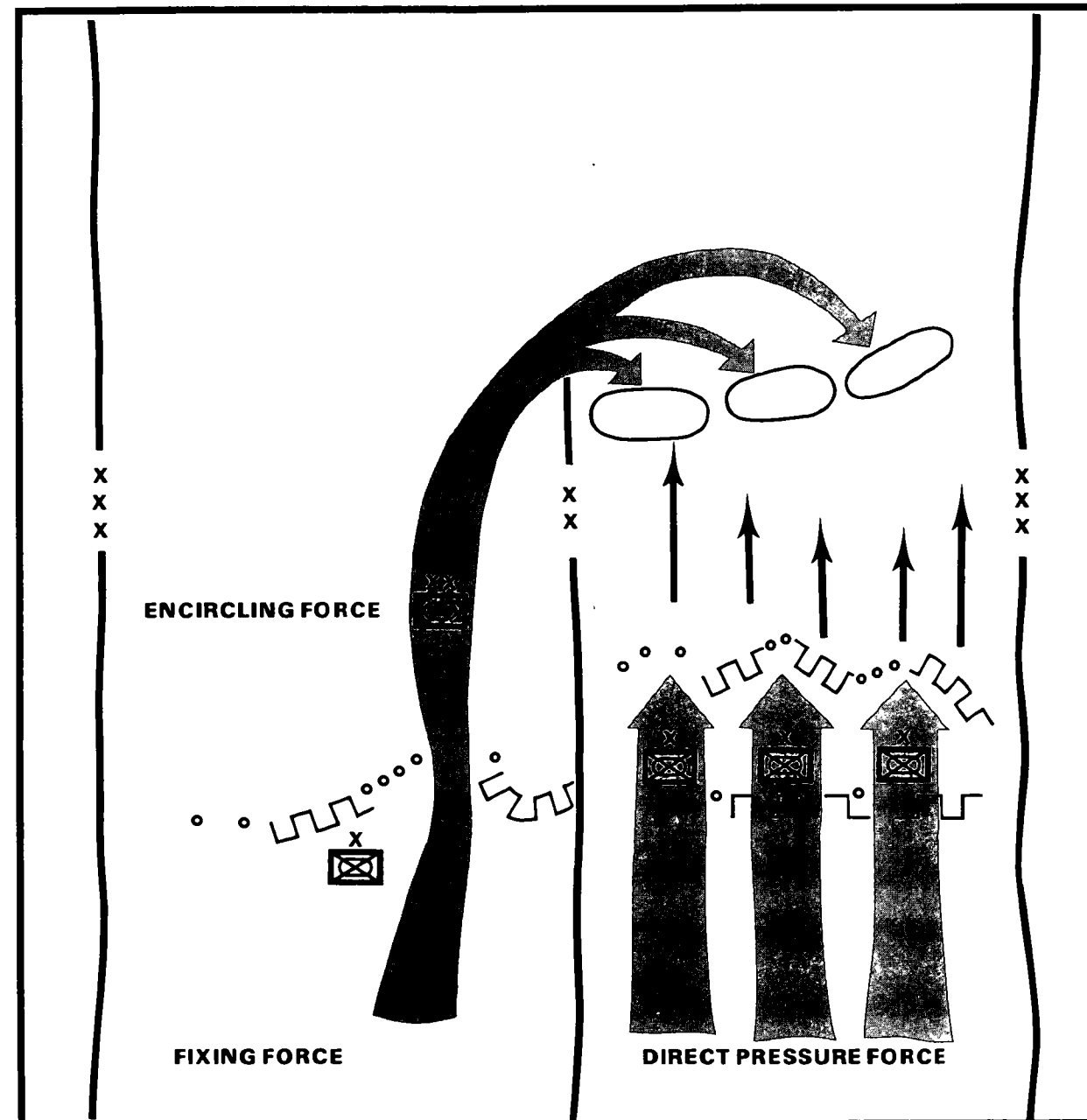
Fire Support Coordination. The FSCOORD has several key coordination problems in the exploitation. These include—

- ☐ coordination of support for the original passage of lines at the penetration;
- ☐ constant coordination with the follow and support forces—to include recommending establishment of restricted fire lines where needed; and
- ☐ closely monitoring the progress of exploiting brigades to insure that fire control measures (such as RFLs) are placed into effect if brigades begin to converge.

FSCL. In this case, because of the highly fluid nature of the operation, the FSCOORD must recommend that the FSCL be kept *well* forward. Locations of friendly units will be constantly changing and all CAS in the objective area must be closely coordinated.

FOLD OUT FOR
PAGE 4-62 WITH FIGURE 4-21.

FIGURE 4-20. DIRECT PRESSURE AND ENCIRCLING FORCE



4-10. How to Support a Pursuit

□ Employment of Forces in the Pursuit

The pursuit to destroy a retreating enemy is an extension of the exploitation. The pursuit is conducted to cut off the enemy and completely destroy him. The commander rapidly commits all available forces to pursue when the enemy has lost his ability to operate effectively and attempts to flee.

Forces conducting a pursuit continue direct pressure on a broad front against the enemy with one element. Another highly mobile encircling element cuts the enemy's line of retreat to intercept and destroy him. If the encircling force cannot outdistance the enemy, it attacks the enemy main body on the flank.

Air assault forces may secure key terrain in the path of the retreating enemy to block his escape routes. Tactical air forces strike deep and concentrate on escape routes and enemy reserves.

In many respects, fire support for a pursuit is similar to that for an exploitation. The principal differences are explained by the single goal of the pursuit: destruction of the enemy force. While rapid advancement of elements on multiple routes characterize both operations, in the pursuit, the *objective* is to bring the elements together to destroy the enemy.

The fire support system must be flexible enough to allow independent support of the direct pressure and encircling forces during the pursuit—yet allow coordinated employment to effect destruction of the enemy after he is trapped (fig 4-20).

Whether the pursuit is conducted by a corps or a division, the same functional roles (direct pressure and encircling) must be played and the same fire support tasks accomplished. These tasks include:

Support of the direct pressure force by—

- ☐ firing on retreating enemy units to slow, erode, demoralize, and destroy them;
- ☐ suppressing enemy rear guard and strongpoint units so that they can be bypassed and contact with the main force maintained; and
- ☐ massing fires from all fire support means on enemy forces concentrated around chokepoints, defiles, communication centers, and bridges.

Support the encircling force by—

- ☐ suppressing enemy positions with smoke, HE, and ICM so that the enveloping force can rapidly bypass them; and
- ☐ firing to support the encircling force's flank attack if it is unable to outdistance the enemy main body.

Support the converged direct pressure and encircling forces by—

- ☐ massing fires from all fire support means to destroy the trapped enemy.

If a corps is conducting the pursuit with direct pressure and encircling divisions, then the FSCOORD of each division plans and coordinates fire support of his respective operation. The corps commander establishes the appropriate boundaries, FSCLs, and RFLs to insure that fires are coordinated smoothly when the forces converge.

If a single *division* is furnishing both the direct pressure and encircling forces, the division FSCOORD must recommend to the division commander how the division's fire support system should be organized. Both the direct pressure and encircling forces must have highly responsive fire support. Both forces will need CAS sorties allocated for preplanned missions and for use against targets of opportunity.

FOLD OUT FOR
PAGE 4-63 WITH FIGURE 4-20.

The division's field artillery assets must be organized for combat to deal with this operation. Again, distance, capability to control, and speed of movement are the main factors in determining whether FA assets with the encircling force are *attached* to that force or support is furnished by use of FA battalions with direct support and reinforcing missions.

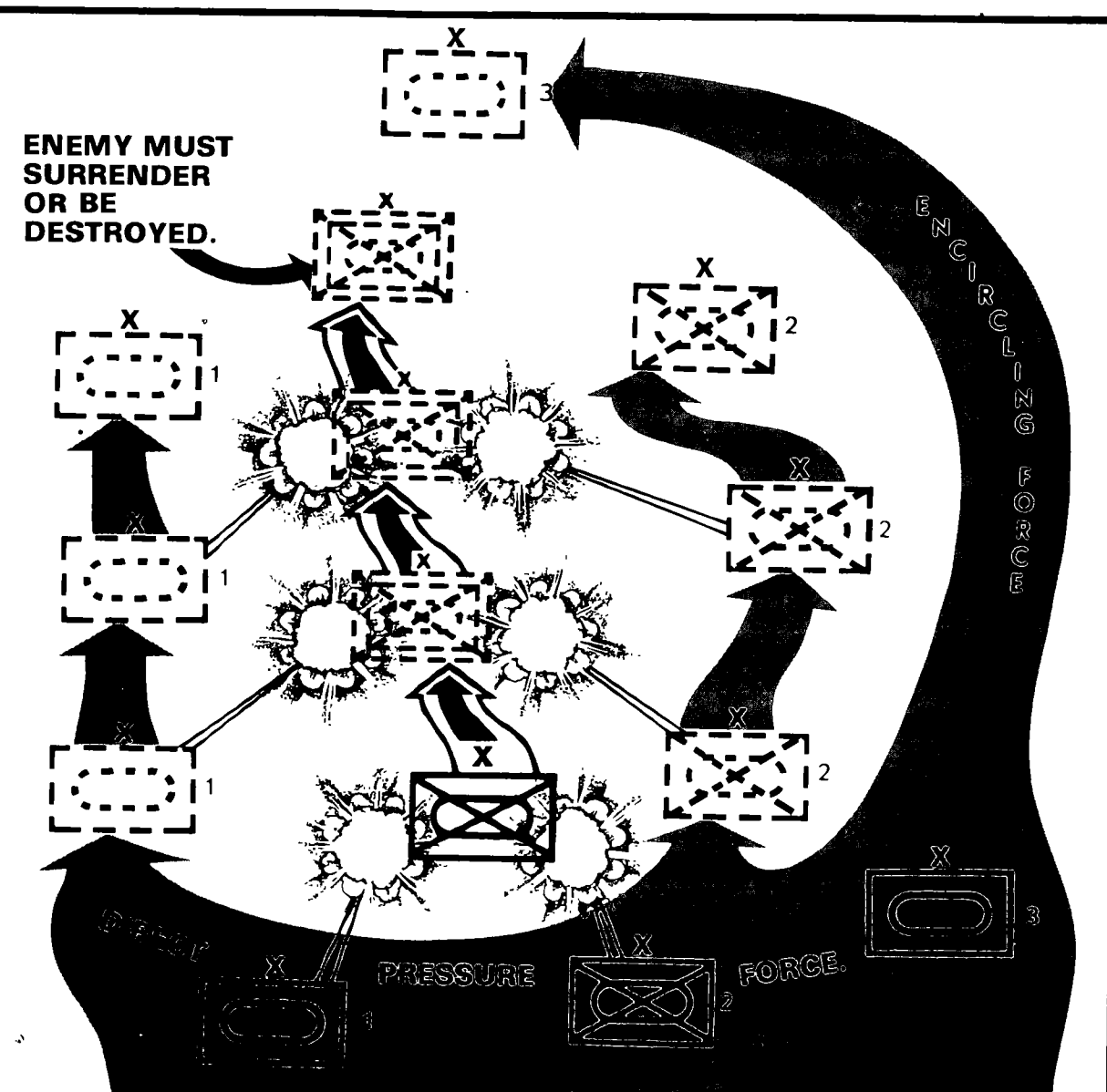
Like the exploitation, fire planning for the pursuit will be primarily hasty and informal. Planned fires for the direct pressure force will orient on chokepoints and defiles where the retreating enemy may be forced to converge. The encircling force will plan suppressive fires along its route to support its rapid movement.

Fire planners at division level should anticipate the most likely locations where the encircling force can trap the enemy and plan for the employment of massed fires at critical chokepoints. They should also plan fire to cover any gaps or escape routes around the flanks of the encircling force.

Fire Support Coordination. The most important coordination problem faced by the pursuing division FSCOORD occurs when the direct pressure and encircling forces converge to destroy the enemy. The division FSCOORD must insure that the division's entire fire support system fires concentrate on the trapped enemy force. Normally, a restrictive fire line is placed between the two converging forces to insure smooth coordination of fires while the situation is fluid.

□ **How to Support a Division
Exploitation and Pursuit**

FIGURE 4-21. DIVISION EXPLOITATION AND PURSUIT



The 12th Armored Division has made a breakthrough in its zone. It has been gradually exploiting and pursuing the enemy as shown in figure 4-21. The 3d Brigade is currently in reserve. Elements of the 52d Mechanized Division have a follow

and support role for the division.

Corps has just directed the division to continue its direct pressure and with one armored brigade to encircle the defenders in the zone and to prevent their escape

through the mountain pass at BANGLING.

At the time the corps order is received, the fire support assets for the 12th Armored Division consist of mortars, CAS, and the following FA organization for combat.

Mortars. Those organic to the maneuver battalion task forces of the division.

CAS. The division has been allocated 40 sorties (A-10 aircraft) daily.

FA. The current FA organization for combat is as follows (division artillery plus an attached FA Bde):

ORGANIZATION FOR COMBAT

1-60 FA (155 SP):	DS 1 Bde
1-61 FA (155 SP):	DS 2 Bde
1-62 FA (155 SP)	R 1-61 FA; O/O DS 3 Bde
1-63 FA (8 SP):	GSR 1-60 FA
1-501 FA (155 SP):	R 1-60 FA
1-502 FA (155 SP):	R 1-61 FA
1-503 FA (8 SP):	GS
1-504 FA (8 SP):	GS
Btry A (TAB), 333 FA:	GS
HHB, 501 FA Bde:	Div arty alt

The division commander provides the G3 and the FSCOORD the necessary guidance on how he plans to use and control the encircling force. He asks for recommendations on task force organization and fire support organization for combat for the 3d Bde.

FSCOORD Activities. The FSCOORD recommends the following fire support allocations for the 3d Brigade:

Mortars. Those organic to the battalion task forces of 3d Bde.

CAS. Division suballocates 20 sorties to 3 Bde.

FA. 501 FA Bde: DS 3 Bde.

1-62 FA (155 SP)

1-501 FA (155 SP)

1-504 FA (8 SP)

Under the recommended FA organization, the 501st FA Bde HQ becomes the force field artillery headquarters for the 3d Brigade. The field artillery brigade commander becomes the FSCOORD for the maneuver force. With the attachment of the 1-62 FA to the FA brigade, the normal relationship (DS battalion to supported brigade) is maintained.

Because the encircling force (3 Bde) is going deep to BANGLING, it may be necessary to establish an RFL between it and the other two brigades of the division. This will insure the safety of all concerned from the effects of friendly fire support.

The field artillery with the 501st FA Brigade must have high mobility to keep up with the fast-moving action of the encircling force. The range of the 8-inch howitzers reaches the deep targets. In addition, these weapons can contribute to the main force, if necessary. Field artillery delivered smoke may be used in masking the encircling force actions.

4-11. Summary

The concepts and fundamentals of various offensive operations and how the fire support system supports the operations have been discussed. The relationship between maneuver and field artillery commanders and their staffs in planning and executing the battle plans has been described as the key to successful offensive operations. This relationship coupled with an offensive spirit is the winning combination. The next chapter describes the defense—the prelude to the offense.





Defense

5-1. Primary Purpose of the Defense

The primary purpose of the defense is to kill enough men and destroy enough vehicles to convince the enemy that his attack is too costly.

Complete discussions for defensive operations are found in FM 71-100 series manuals and in FM 100-5. The other purposes of the defense are shown in figure 5-1:

WHY

- The enemy must attack to win. We can make his attack fail by executing a well-planned, vigorous, active defensive operation that makes maximum use of our combat power.

WHAT

- This chapter tells you:
 - the purposes, concept, and fundamentals of the defense;
 - the considerations for defensive fire support;
 - how the fire support system supports the covering force area and the main battle area; and
 - the considerations for fire support in withdrawal operations.

FIGURE 5-1. OTHER PURPOSES OF THE DEFENSE.

- To concentrate forces elsewhere;
- To gain time;
- To preserve forces, facilities, or installations; and
- To control essential terrain.

5-2. Concept of the Defense

The concept of the active defense is to defeat the attacker by confronting him with strong combined arms teams fighting from battle positions organized in depth. As the enemy attack moves into the defended area, he encounters fires of increasing intensity being delivered from the front and especially the flanks. The defender constantly shifts forces to take maximum advantage of the terrain and to put himself in a favorable posture to attack wherever possible.

Obstacles are used to stop or slow the enemy attack, especially in areas covered by the defender's weapons, where the enemy will be vulnerable to attack.

When the enemy attack begins to slow and his elements are exposed, the defender can often destroy even more enemy by attacking. Counterattacks may also be necessary to reoccupy critical terrain. The counterattack decision must be weighed carefully. In the counterattack, the defender gives up many of the natural advantages that accrue to him.

To slow the attack so there will be more time to engage large numbers of targets, the defender may need to occupy certain terrain for long periods.

5-3. Fundamentals of the Defense

Just as the force commander uses the fundamentals of the defense, his fire support coordinator heeds them to tailor fire support in defensive operations.

The fundamentals of defensive operations are:

- 1 Understand the enemy**
- 2 See the battlefield**
- 3 Concentrate at critical times and places**
- 4 Fight as a combined arms team**
- 5 Exploit the advantages of the defender**

1. Understand the Enemy

Chapter 2 described the enemy that may confront the defender. Commanders and their FSCOORDs must know enemy strengths and weaknesses, organizations, weapons, tactics, and fire support

capabilities. With this knowledge, fire support can be more effectively integrated into defensive battle plans.

As in the offense, the commander and his FSCOORD must have a sound understanding of where enemy combat resources are usually located and which of these resources represent priority fire support targets for the force.

2. See the Battlefield

The defending commander must organize to defeat different types of likely attacks from multiple directions. He must learn where the enemy is, how he is organized, which way he is moving, and what his strength is. A continuous flow of information concerning the enemy enables the defending commander and his FSCOORD to better plan the uses of available fire support. The collocation of the FSE with the operations and intelligence elements of the force insures the prompt exchange of information.

The FSCOORD exploits all available intelligence sources to better see the battlefield. Targets and target information come from many sources. This information is used in fire support decisions.

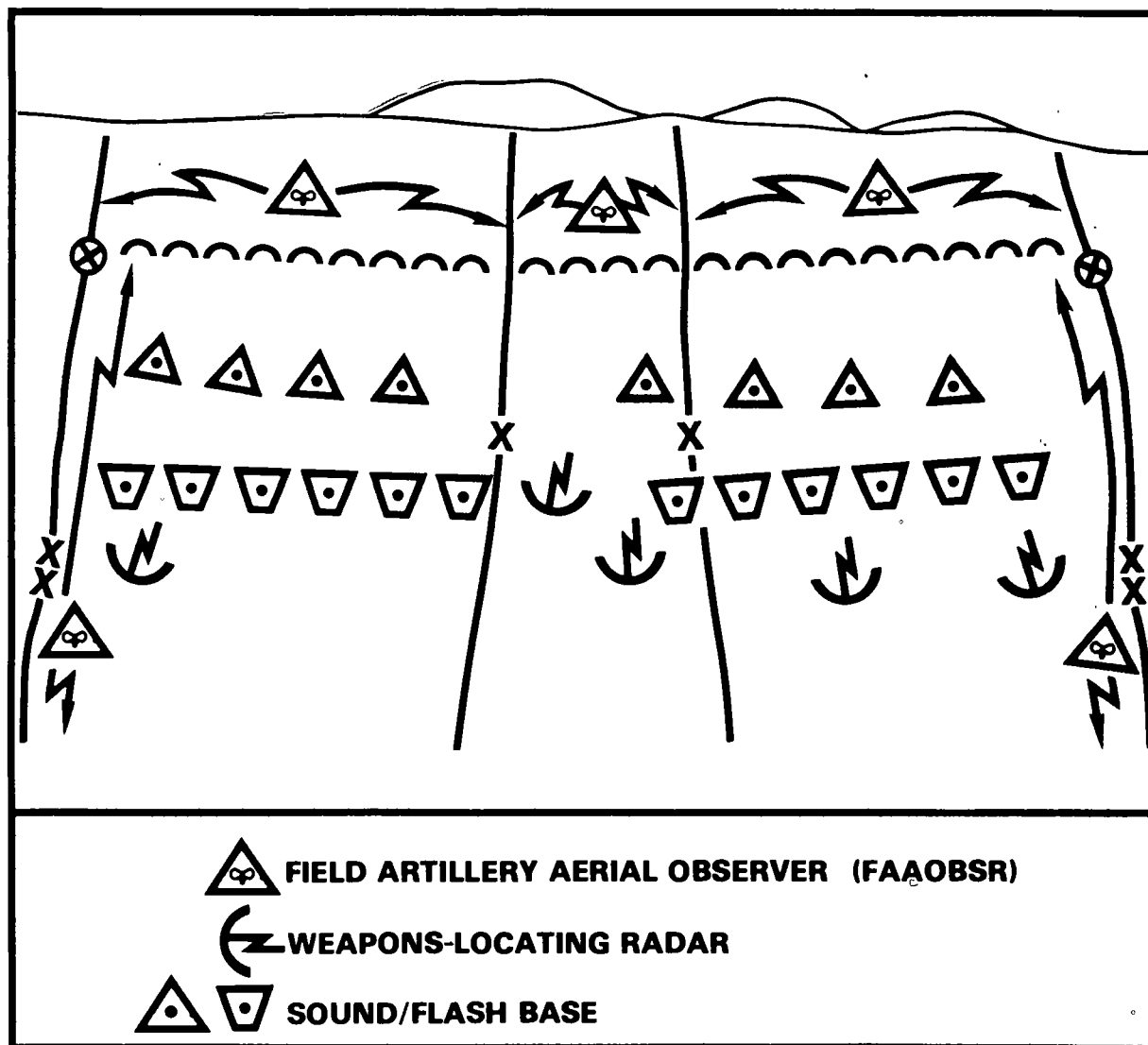
While FSCOORDs for brigade and task force echelons are concerned with targets to their immediate front, FSCOORDs at division and corps are more concerned with 2d echelon and deeper targets.



FIGURE 5-2 SHOWS DIVISION ARTILLERY TARGET ACQUISITION ASSETS.

3. Concentrate at Critical Times

Defending force commanders must decide exactly when and where they will concentrate their available firepower. To do this, they need effective results from combat information and target acquisition efforts.

FIGURE 5-2. DIVISION ARTILLERY TARGET ACQUISITION ASSETS.

To defend against enemy breakthrough tactics, commanders must not only concentrate forces at the right place and time but also take risks on their flanks. Indirect fires may be massed to assist in achieving this concentration. They also may be used on the flanks instead of defenders. Artillery sown minefields may make selected enemy avenues impassable. Indirect fires can be

rapidly shifted across wide areas both laterally and in depth.

CAS enables forward engaged elements to attack all enemy targets that present themselves in the area of concern. These strikes can be used in concert with other fire support in progress. CAS aircraft will often require SEAD support during their strikes.

4 Fight As A Combined Arms Team

As friendly units converge on the critical battle sites, brigade commanders commit their units to combat according to their weapons capabilities and movement of the enemy force.

The first increment of combat power used on the attacker is usually the massed fires of indirect-fire weapons and CAS. FA fires can cause tank crews to button up and thus reduce their effectiveness. CAS can destroy them. Also, FA fire support can discourage dismounted attacks against our dug in antitank weapons. Smoke can hinder enemy overwatching activities.

SEAD fires can protect friendly aircraft (CAS and aviation) from enemy air defense fires. This requires close coordination between the FSCOORD and liaison representatives from the Air Force and aviation elements and usually is effected within an FSE.

5 Exploit the Advantages of the Defender

The defender's advantages are numerous and permit a numerically inferior force to defeat a much larger attacker. The greatest advantage is perhaps the opportunity to become highly familiar with the terrain before the battle commences.

The defender can plan fire support on approaches into the defensive area—making access into those avenues more difficult, if not impassable. Weapon positions which support each other can be prepared to take advantage of the terrain, and covered routes may be selected. Also, survey control usually is available in the defended area.

5-4. How to Support the Defense

The force commander in the defense should expect his fire support system to:

- Disorganize, delay, and weaken the enemy before he attacks.
- Strike the enemy as he attacks to strip away his air defense and reconnaissance: 1) button up his armor and slow it; 2) canalize him; 3) suppress his direct-fire weapons; and 4) reduce the odds.
- Fire beyond the MBA to isolate first echelon forces, to stall and weaken second echelon forces.
- Mass fires to canalize, stall, and destroy attacking elements in the MBA.
- Counterfire throughout to suppress, neutralize, or destroy enemy indirect-fire support and air defenses.

Commanders and FSCOORDs should use the following considerations as a basis for planning and coordinating fire support for defensive operations.

- **Centralize Control of Fire Support.** The vagueness of the initial situation in the defense dictates that the commander maintain control of fire support means to react quickly when he discovers the enemy's main thrust. CAS sorties probably will be retained as a tactical reserve at division level for use in critical areas. FA units will be assigned tactical missions that retain fire planning, priority of fires, and positioning authority at higher levels. This exploits their capability to rapidly mass and shift fires. However, responsive, continuous fire support must be provided to engaged maneuver forces. As a minimum, every committed brigade must have the support of its DS FA battalion.

• **Use Mobility to Concentrate Fire Support as Necessary.** When the range limitations of FA and mortar units preclude the effective massing of indirect fires, they must be moved to reinforce critical areas with firepower, just as maneuver forces reinforce the defense of the critical area. Moves must be planned and coordinated so that the maximum number of firing units are available at any given time.

• **Engage targets on the Basis of the Commander's Priorities.** The enemy attack will, at times, present more targets than we can effectively engage. Because our resources are limited, FSCORDs must take special care to insure that we attack the most dangerous targets first in accordance with the commander's target priorities.

• **Engage the Enemy as Far Forward as Possible.** The enemy should be attacked as far away as possible so that attrition begins as early as possible. As he advances, he faces an ever-increasing, continuous volume of firepower. Unless the battle plan dictates otherwise (e.g., to achieve surprise or enhance the accuracy of direct-fire gunners), targets should be engaged when acquired. FA and mortar units must be positioned far enough forward to allow early engagement of acquired targets, yet must be echeloned in depth so that continuous fire can be maintained.

Counterfire is managed at the division artillery TOC. Counterfire targets are acquired by the division artillery target acquisition battery and by other intelligence means available to the division or corps. The division artillery TOC analyzes this information and coordinates the timely attack of counterfire targets. As a general rule, there will be insufficient field artillery to immediately respond to all battalion task force requirements and meet counterfire requirements at the same time. So, the division commander sets priorities for distribution of field artillery fires to guide the division artillery commander. Offensive air

support aircraft are also an effective counterfire weapon system and should be integrated into counterfire operations.

5-5. How to Organize the Battlefield

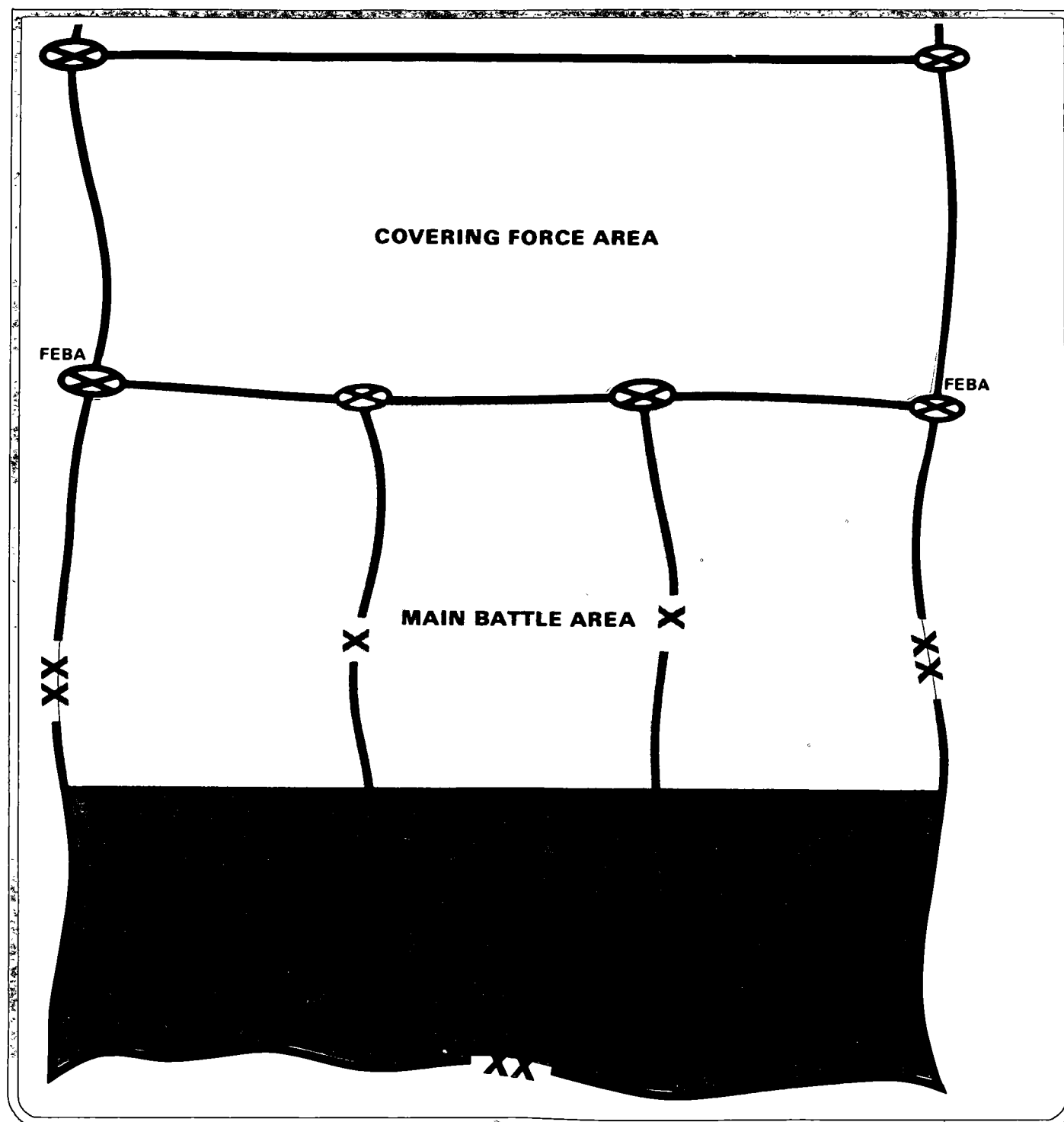
To perform a defensive mission, a division or corps allocates forces for three areas: covering force area (CFA), main battle area (MBA), and rear area. The width, depth, organization, and mission of forces in each of these areas vary based on the commander's analysis of the division mission, knowledge of the terrain, strengths and tactics used by the enemy, and the capabilities of division forces.

☐ Covering Force Area

The CFA extends from the line of contact or a line designated by the commander, back to the forward edge of the main battle area. The CFA should be deep enough to allow friendly forces to develop the situation and determine the enemy's intent. Covering forces slow, delay, and wear down the enemy and exert sufficient pressure to cause the enemy to form for a breakthrough attack.

A division covering force must be highly mobile and might consist of four to six battalion task forces formed of armored cavalry and tanks with mechanized infantry, attack helicopters, antitank weapons, air defense, engineers, and strong fire support assets. A covering force may be organized from corps, division, and/or brigade assets.

The covering force may be controlled by corps, or division, or the MBA brigades may control the covering force forward of their positions. With the corps or division covering force, MBA forces will assume control of covering forces operating forward of MBA positions to insure a smooth transition into the MBA fight. The change of control of the covering force normally occurs 2–4 kilometers from the FEBA when the covering force battle can be supported by DS field artillery within the MBA.

FIGURE 5-3. DIVISION DEFENSIVE AREA

CAS and indirect fires should be used liberally to canalize the enemy, erode his combat power, and reduce his forward momentum. When defending forces maneuver, mortars and FA can suppress enemy weapons to reduce vulnerability and increase freedom of action. Mortar and FA smoke are used to isolate lead enemy forces from follow-on echelons. Smoke is also used to assist disengaging friendly forces and to screen movement to new battle positions. Enemy air defense weapons and associated equipment are suppressed (SEAD fires) to protect friendly aircraft.

□ Main Battle Area

The MBA is bounded in front by the FEBA and extends back to the limits of the brigade area of responsibility. The bulk of the defending force is deployed there because this is the area the defender chose for decisive battle to defeat the enemy. Forces are prepared to concentrate to defeat the enemy main thrust.

Fire support is used in the MBA to stop, slow, or destroy enemy forces and to enhance the employment of direct-fire weapons. Maximum use of massed surprise fires inflicts the greatest damage upon the enemy force. Because refinement of MBA fire support planning occurs during the covering force battle, targeting information and intelligence on the developing battle must flow from the CFA to the MBA.

A committed division normally has an FA brigade augmenting fires of the division artillery. The FA brigade is either attached to the division artillery or is given the mission to reinforce the division artillery. When attached, the FA brigade may be given a tactical mission or the division artillery commander may assign tactical missions to individual battalions.

CAS sorties are targeted on close-in targets and battlefield air interdiction (BAI) sorties are flown against deeper second echelon forces. Most CAS sorties are used against

targets that cannot be effectively fired upon by friendly indirect-fire weapons.

□ Rear Area

The division controls the area behind the brigades back to the division rear boundary. Combat service support is projected forward from the rear area to sustain the defending forces. Brigade trains and some division reserve elements may also be located here.

□ Defense Related Terms and Graphics

Adequate fire support requires an understanding of defense related terms and graphics. The most common include:

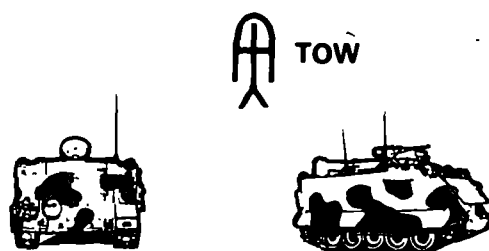
- **Abatis.** An obstacle constructed by felling trees on both sides of a road in such a manner that they fall, interlocked, at a 45-degree angle to the road to block vehicle traffic.



- **Active defense.** The system of flexible and elastic defense on the mechanized battlefield is designed to fight successfully against greatly superior attacking armored formations. The principle of active defense is to wear down the enemy by confronting him aggressively and continually from successive

positions with strong combined arms teams and task forces. These teams and task forces fight from mutually supporting battle positions in depth throughout the battle area.

- **Antitank guided missile.** The term ATGM (antitank guided missile) refers to man-portable or vehicle-launched antitank missiles.



- **Barrier plan.** That part of an operation plan/order concerned with the use of coordinated obstacle systems to canalize, direct, restrict, or stop the movement of an enemy force.

- **Battle position.** A location selected as a result of terrain and weapons analysis from which units can defend, block, or attack. The battle positions can be selected for occupation by units as large as task forces and as small as platoons. The defending commander directs the fight by specifying which battle positions his units will occupy and what they will do there (occupy, defend to retain, or create a strongpoint).

OCCUPIED
COMPANY
POSITION

B13

B5

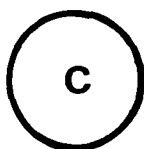
PREPARED BUT
NOT OCCUPIED
COMPANY POSITION

■ **Boundary.** A control measure used to delineate areas of tactical responsibility for subordinate units. Within their boundaries, units may fire and maneuver in accordance with the overall plan without close coordination with neighboring units unless otherwise restricted. In the defense, these areas are referred to as sectors of responsibility. Boundaries may be used in conjunction with other directional control measures:
Example:

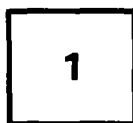


■ **Canalize.** To restrict operations to a narrow zone (sector) by natural or artificial obstacles or by fire support.

■ **Checkpoint.** A point on the ground designated to provide a reference for rapidly reporting specific locations and information about the control of units. Checkpoints are designated on identifiable terrain features or manmade objects.



■ **Contact point.** A designated, easily identifiable point on the terrain where two or more units are required to make physical contact.



■ **Coordinating points.** Specific points for the coordination of fires and maneuver between adjacent units in the defense (including security operations). They are located on easily identifiable and accessible terrain features.



■ **Covering force.** In defensive operations, a covering force operating apart from the main body has four basic functions: 1) force the enemy into revealing the strength, location, and general direction of his main attack; 2) deceive the enemy or prevent him from determining the strength, dispositions, and location of friendly forces, especially those in the main battle area; 3) strip the enemy of his air defense umbrella or force him to displace his air defenses before attacking the main battle area; and 4) gain time for the main battle area forces.

■ **Covering force area.** In defensive operations, the covering force area starts at the line of contact (actual or anticipated) and ends at the forward edge of the main battle area.

■ **Defend.** A mission assigned to a unit requiring it to destroy an attacking enemy force or stop it from penetrating the assigned sector or battle position.

■ **Delay.** Mission, or degree of resistance used, in which a force applies sufficient combat power to inflict maximum losses on the enemy.

- **Delay line.** A line forward of which friendly forces effect maximum delay and attrition on advancing enemy forces.



- **Final protective line.** A line selected where an enemy assault is to be checked by interlocking fires from all available weapons.

- **Forward edge of the main battle area.** Designated area where the main defensive effort is to begin. It is at the junction of the covering force area and main battle area in the active defense.
Example:



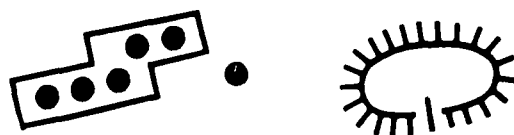
- **Main battle area.** The area where the main defensive battle will be fought. It is behind the covering force area and is bounded by the forward edge of the battle area (FEBA) at the front, lateral boundaries on the sides, and a rear boundary. At brigade level, the rear boundary often is not depicted graphically.

- **Passage of lines.** Passing one unit through the positions of another similar to a covering force withdrawing through the FEBA.

- **Sectors.** The battle areas from which brigades fight are called sectors. Sectors are designated based on terrain, enemy capabilities and friendly forces available. They are sited on the best defensible terrain astride enemy avenues of approach. Sectors clearly assign the terrain for which the brigade commander is responsible. He must then fit his forces to the assigned terrain using battalion battle positions or sectors. Maneuver and fire across sector boundaries requires prior coordination, but must not preclude engaging an enemy force. Sectors must follow recognizable features on the ground.



- **Strongpoint.** A specific location, normally designated by a brigade or higher unit commander, selected as a result of terrain and weapons analysis. The strongpoint is essentially an antitank nest which cannot be overrun quickly by tanks. A strongpoint is located on a terrain feature critical to the defense or one that must be denied to the enemy.



- **Withdrawal.** An operation in which a force in contact disengages from combat and moves to another area. This operation may be conducted with or without enemy pressure.

5-6. How to Support the Covering Force Area

☐ Control of the Covering Force Area

Forces in the covering force area may be under division control or under control of the brigades in the main battle area. On rare occasions, corps may control forces in the covering force area. Three variables influence the decision: depth of the covering force area, width of the sector, and availability of control headquarters.

Most often, the covering force will be controlled initially by division. This requires that control of the covering force battle be passed to the forward committed brigades at a reasonable distance forward of the main battle area (2—4 km). Prime considerations in the location of the change of control are the nature of the terrain and the ability of the main battle area brigades to coordinate indirect fires in support of covering forces. Other considerations include the flow of the battle, enemy pressure, and communications capability to positively control covering forces.

Control of the covering forces FA may be accomplished by forming a force FA headquarters, under the division artillery headquarters, under an attached FA brigade headquarters, or under an FA battalion group.

☐ Fire Support Assets

FA. FA attached to or placed in support of a covering force is of representative calibers. Generally, one medium FA battalion per regimental size enemy avenue of approach is desirable. One or more heavy FA battalions should be provided for general support of the covering forces. Additional medium battalions may be provided depending on the mission, forces available, and the enemy that can be expected to advance on each avenue of approach.

CAS. The covering force may be provided CAS sorties from an independent allocation or supported from sorties allotted to the parent force (division or corps).

Mortars. Mortar support for the covering forces comes from the mortars organic to participating companies (troops) and task forces (battalions/squadrons) of the maneuver elements.

Other. If other means of fire support (e.g., naval gunfire support) are available to the covering force, liaison personnel with appropriate elements of the covering force can expedite and control requests for their respective means.

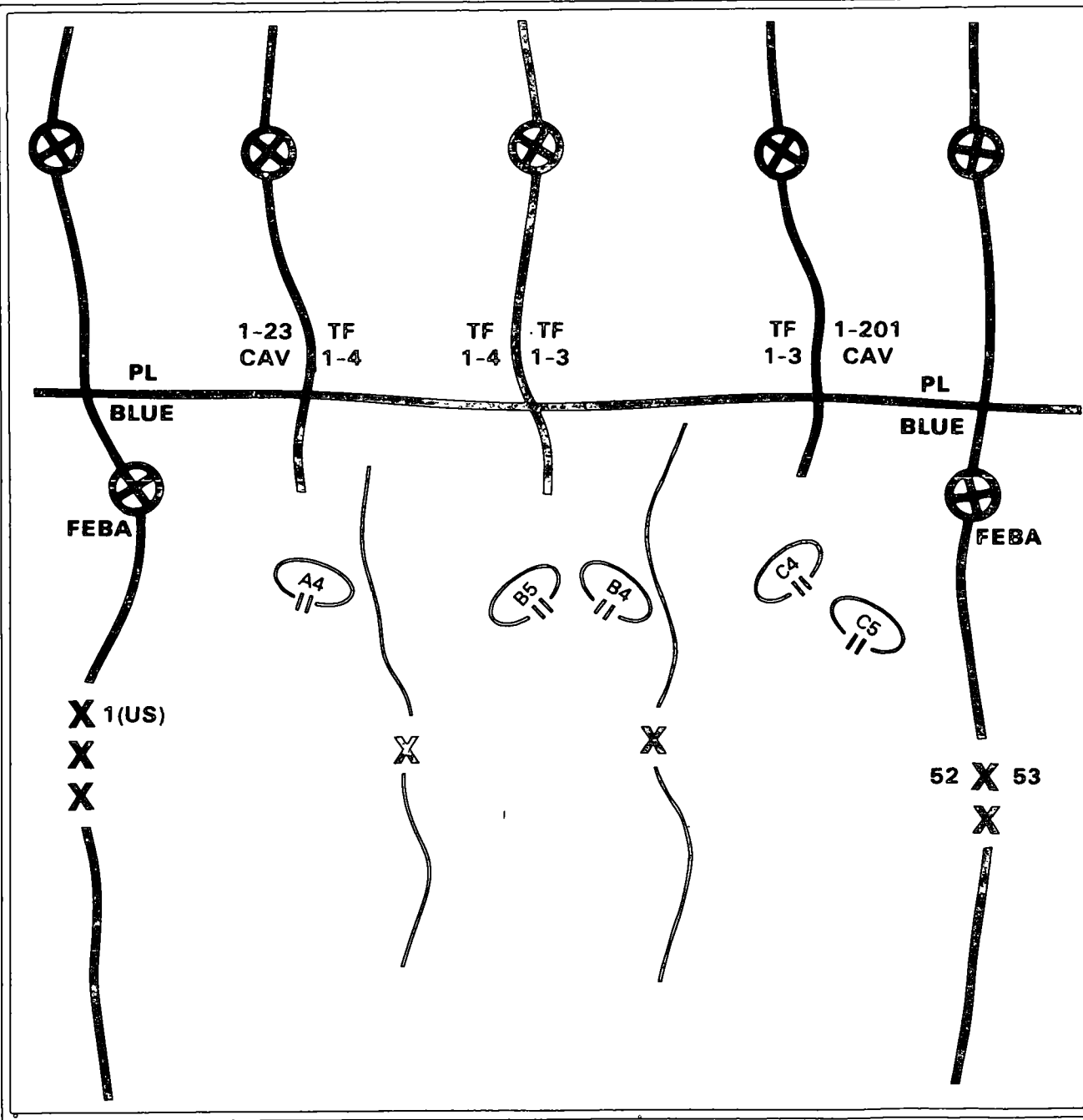
Change of Control. Provisions are made for the transfer of fire support control when the covering force withdraws into the main battle area. Divisional FA elements return to the control of the division artillery and corps artillery elements may revert to corps control or remain under division artillery. The covering force FA headquarters is dissolved. Mortars remain with parent units unless otherwise directed. Unused CAS allocated to the covering force revert to the allotting headquarters. Liaison representatives from other fire support means return to their parent organizations unless otherwise directed.

FSCOORD Activities. The FSCOORD for the covering force will be the FA brigade commander or the senior officer in the division artillery forward headquarters. The FSCOORD will be assisted by the fire support officer in the covering force headquarters.

If covering forces are under control of the main battle area brigades, additional forces will be provided to the brigades for this mission. The additional field artillery (usually a reinforcing battalion from the FA brigade) will be controlled by the FA battalion in direct support of the main battle area brigade. In this case, fire support planning and coordination activities for both the covering force area and main battle

area forces will be centered in the brigade FSE. The FSCoord is the DS battalion commander, and he is assisted by the brigade FSO.

FIGURE 5-4. MANEUVER UNITS IN THE COVERING FORCE AREA.



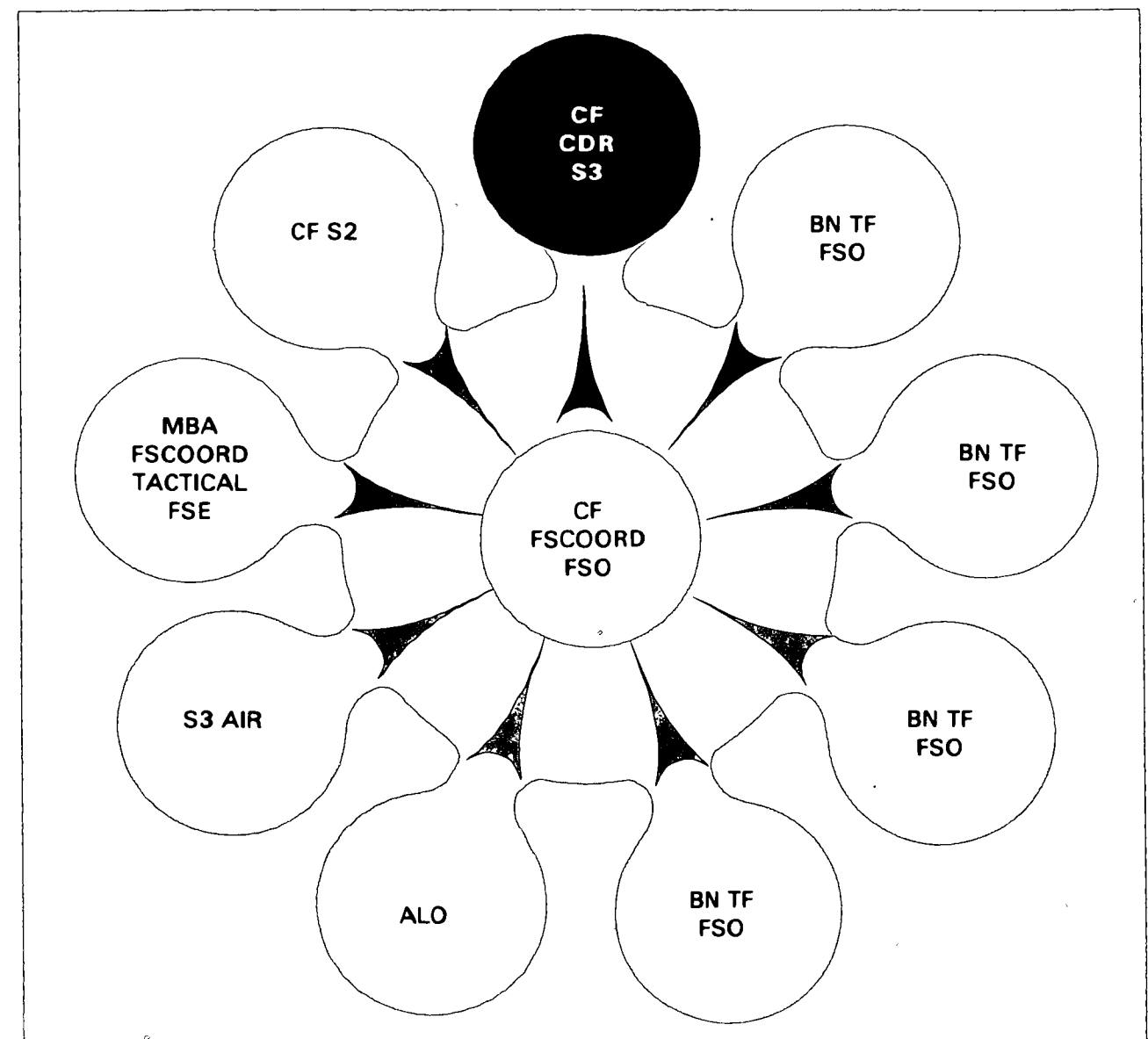
1	2 FIRE SUPPORT ASSETS	
A US mechanized division has received the mission to "defend in sector." The division sector includes the covering force area. Corps has attached the corps armored cavalry regiment headquarters and one armored cavalry regiment squadron to the division.	Divisional	Attached
	HHB, 52 Mech Div Arty Btry A (TAB), 112 FA 1-40 FA (155 SP) 1-41 FA (155 SP) 1-42 FA (155 SP) 1-43 FA (8 SP)	HHB, 201 FA Bde 1-300 FA (155 SP) 1-301 FA (155 SP) 1-302 FA (155 SP) 1-303 FA (8 SP) 1-404 FA (8 SP) (155 btry org to cav sqdn)
3	After analyzing his mission and situation, the division commander allocated forces to the main battle area, the covering force, and a small division reserve. The division-controlled covering force consists of the armored cavalry regiment headquarters and cavalry squadron, the division cavalry squadron, and two tank-heavy task forces. Engineer support is provided by a two-company engineer task force. The division FSCoord (division artillery commander) recommended, and the commander approved, that the 201st FA Brigade (with the 1-43 FA battalion and the 155-mm howitzer battery of the 1-201st Cav attached) provide the FA support for the covering force. The FA support for the covering force will be: 201 FA Bde 1-43 FA (8 SP) 1-300 FA (155 SP) 1-301 FA (155 SP) 1-302 FA (155 SP) 1-303 FA (8 SP) 1-304 FA (8 SP) How Btry (155 SP), 1-201 Cav The HHB, 201st FA brigade will function as the covering force FA headquarters. Maneuver battalions as- signed to the covering force will retain their normal FISTs and FSOs. The covering force commander must fight the enemy with sufficient aggressiveness that the enemy will be forced to deploy, plan an attack, and thus reveal the direction and strength of his main effort. The terrain is relatively open and rolling, especially in the center of the covering force sector. The center avenue of approach appears to be the most likely place for a major enemy breakthrough effort. Therefore, the covering force commander distributes his maneuver units with narrower sectors in the center as shown in figure 5-5.	

□ **How to Support a Division-Controlled Covering Force**

FSCOORD Activities. The covering force FSCOORD is the commander of the FA

brigade. He advises the covering force commander on all fire support matter. He is assisted by the armored cavalry regiment FSO who becomes the assistant FSCOORD. His contacts in the planning and coordination of fire support are shown in figure 5-5.

FIGURE 5-5. COVERING FORCE FSCOORD FIRE SUPPORT CONTACTS.



The covering force commander and the FSCOORD work together to visualize the battle and develop the general plan of fire support for the covering force area. The FSCOORD must:

- determine the covering force level fire support tasks;
- considering the commander's guidance and assets available, assign tasks to the most appropriate asset;
- recommend allocation/organization of fire support assets for subordinate maneuver units; and
- prepare the covering force fire support plan.

In this case, the covering force FSCOORD also has a special responsibility—he must insure that a constant two-way flow of information takes place between the covering force FSE and the division FSEs in the main battle area.

Covering Force Area Fire Support Tasks. Fire support tasks at covering force HQ level consist primarily of:

- providing adequate fire support assets to subordinate units for their close support;
- placing deep fires for use early on approaching enemy forces to slow, force early deployment, canalize, and destroy them;
- deceiving the enemy as to the location of the forward edge of the main battle area;
- attacking massed enemy forces with massed fire support means;
- massing fires on isolated breakthroughs in the covering force area;
- providing counterfire; and
- suppressing enemy air defenses.

After the covering force commander, his S3, and the FSCOORD have determined and established priority of the fire support tasks,

the FSCOORD must consider available fire support assets and commander's guidance to determine how the tasks can best be met.

FA. The 201 FA Bde is the covering force's FA headquarters. It has the battalions and battery shown earlier. The fires of the 52 Mech Division Artillery will become available when the covering force comes within range. These units will be in forward supplementary positions to enhance such support. Upon request by the 201 FA Bde, they will augment the fire of covering force field artillery units as the fight comes into range.

The covering force commander's guidance to the FSCOORD includes:

"Give plenty of highly responsive fire support to the battalion task forces.

"Be sure to position FA to avoid interference with maneuver forces. The situation may develop quickly, so position with rearward movement in mind. Recon routes and rearward positions, keep as much equipment loaded as possible, and be prepared to move on short notice. We'll need these FA units for the main battle area too.

"I retain authority to emplace scatterable mines. You (FSCOORD) and the engineer coordinate closely to complement the obstacle plan to further reduce the enemy's momentum.

"Plan fires to: 1) engage enemy at maximum effective distance possible, 2) cover obstacles, 3) cover flanks and gaps with fire, 4) allow CAS and AH to operate effectively, and 5) destroy enemy electronic jammers."

The FSCoord then assigns fire support tasks to the most appropriate fire support means available.

- Close support requirements will be met by recommending to the covering force commander that each *battalion TF receive one FA battalion* in direct support.
- The remaining FA units will be used to augment the fires of DS FA in the covering force area, place deep fires on enemy forces beyond the battalion TF sectors, cover obstacles in the covering force sector, destroy enemy electronic jammers, provide counterfire, and suppress enemy air defense.
- All FA assets will be considered for mass fire missions when large concentrations of enemy forces present a vulnerable target.

In organizing the covering force field artillery for combat, the FSCoord considers both the value of providing massed fires and the need for responsiveness to battalion task forces. Although normally one FA battalion is placed in direct support of a brigade, because of the wide frontages, lack of maneuver combat power, and fluid nature of the CF fight, the FSCoord has recommended that one FA battalion be placed in direct support of each task force/squadron. Because there are only three 155-mm battalions available, the FSCoord recommends that one of the nondivisional 155-mm battalions be used as the fourth DS battalion. (The howitzer battery of the 1-201st Cav will be attached to its DS battalion.)

Two pure 8-in battalions (one is the divisional battalion) are given the mission of GS to the covering force. This provides immediately responsive fire support with which the covering force commander can influence the battle. The three DS battalions in the main battle area are placed in forward supplementary positions near the FEBA. They will begin to augment the fires of the covering force as the fight approaches the main battle area.

Positioning. FA should not be positioned farther forward in the covering force area than is needed to fire on those targets that covering force elements can accurately locate. This is primarily a function of the terrain, the employment of division artillery target acquisition assets, and the division's intelligence-gathering capability. Once this distance is determined, the FSCoord will select position areas for the GS FA and will give general positioning guidance to DS battalion commanders. Primary and alternate positions must be selected and coordinated early so that survey and prestocking of ammunition can be arranged.

The FSCoord will also recommend positioning of the covering force target acquisition assets. This is done in coordination with the covering force S2 on the basis of his analysis of terrain and avenues of approach.

Fire Support Coordination. Coordination between the covering force artillery HQ and the main battle area division artillery TOC *will be extremely important*. The coordination and exchange of information will include such areas as:

- the interchange of targets and targeting information,
- the status of the covering force area battle,

- main battle area positioning information for covering force FA units and any changes to previous orders, and
- logistics information and resupply requests.

Normally, the covering force artillery headquarters will locate with or very near the covering force headquarters to facilitate plans and coordination.

Because of the highly fluid nature of the covering force operation, all CAS sorties will be held at covering force HQ. CAS will be used to destroy massed enemy armor forces, air defense, and indirect-fire systems. Likely targets include:

- second echelon elements of enemy regiments or second echelon divisions moving into the battle area;
- units that have collected in defiles and chokepoints;
- forces massed in assembly areas or assault positions;
- elements breaking through or outflanking friendly covering force positions;
- enemy mortar, FA, and air defense positions; and
- command posts and electronic jammers.

In any case, most targets will be fleeting and will demand rapid requests and decisions. TF FSCOODs and S3 airs, assisted by TACPs, must search for potential CAS targets and plan how CAS will be requested, who will control the strike, and how it will be coordinated.

Aircraft should be loaded with antiarmor munitions (30-mm cannon, Maverick, and Rockeye). A portion should be placed on ground alert as soon as hostilities begin.

If FA or mortars are to be used to mark CAS targets, this must be coordinated with the firing unit, the ALO, and covering force HQ.

Field artillery may furnish fires to suppress enemy air defense. Primary sources of targets include:

- Army aviation units,
- USAF sources,
- FIST observers, and
- division combat electronic warfare intelligence operations center.

To facilitate coordination and enhance responsiveness of indirect fires, the FSCOOD will recommend that the maneuver commander establish fire support coordinating measures to open portions of the battlefield to supporting fires without additional coordination.

In the covering force area, opening as much of the battlefield as possible will facilitate rapid target engagement by fire support assets.

Corps will establish a fire support coordination line to open the battlefield to attack by any weapon system beyond the line without additional coordination.

The covering force commander may establish a coordinated fire line to allow conventional surface fire support weapons (mortars, FA, NGF) to fire upon any target beyond the coordinated fire line without additional coordination. The coordinated fire line must be kept as close as possible to the frontlines and continuously moved toward friendly positions.

□ How to Support a Battalion Task Force in the Covering Force Area

FSCOOD Activities. The FSCOOD is responsible for coordination of all fire support in the TF sector. He advises the commander on the status of enemy and friendly fire support means. He assists the commander in war-gaming enemy and friendly

actions and reactions to determine the best scheme of defense and plan of fire support for the situation.

Support Assets. For this mission, the task force commander has the following major assets available:

- Tank-heavy task force
 - 2 tank companies
 - 1 mechanized infantry company (with 2 TOWs)
 - 1 combat support company (with 4 TOWs attached)
- Fire support
 - 1 company mortar section (in mech co)
 - 1 battalion mortar platoon (bn cbt spt co)
 - 1 FA battalion (DS) (1-302 FA)
- Engineers
 - 1 platoon (DS)

Task Force Organization. Since the terrain was generally the same throughout the sector, the TF 1-3 Armor commander cross-attached his companies as follows:

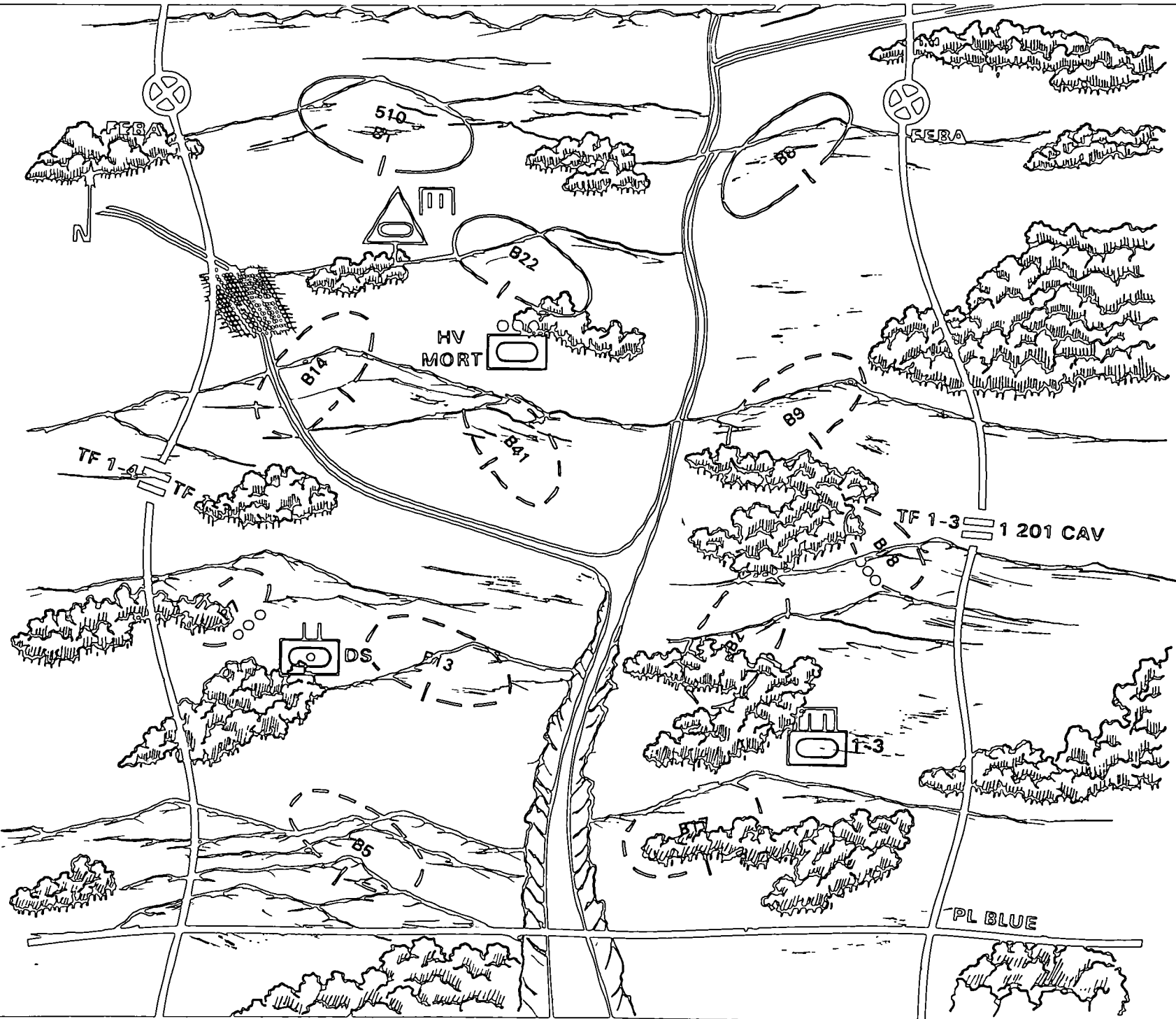
Company Team A A/1-3 Armor (-) 1 Mech plt 1 AT sec	Company Team B B/1-3 Armor 1 Mech plt 1 AT sec
Company Team C Mech co (-) 2 Tk plts	

FIGURE 5-6. TASK FORCE IN THE COVERING FORCE AREA.

Task Force 1-3 Armor, as a part of the division covering force, has been given the mission to "delay in sector." The task force commander must slow and defeat the enemy without losing the integrity of his force. His goal is to deceive the enemy as to the location of the main battle area, and most importantly, cause the enemy to deploy and reveal the direction and strength of his main thrust.

The task force commander expects the enemy to approach in multiple regimental columns preceded by reconnaissance elements. These elements will attempt to bypass defensive positions and maintain the momentum of their advance. As the task force commander has success in stripping away the reconnaissance elements, he expects enemy advance guard elements to conduct hasty attacks from the line of march to envelop his positions. As these attacks are defeated, enemy advance guard elements will conduct a hasty defense, attempting to fix the task force elements in their positions while the regimental main body conducts a hasty attack.

The terrain will be exploited by the task force commander to insure that he uses every advantage of knowing the wrinkles in the ground—where he can get off first round surprise flanking direct fires as well as where he can best employ indirect fires. The task force commander is particularly interested in terrain chokepoints where he can best mass indirect



fires, including scatterable mines, to slow the enemy and increase the target-servicing time for his direct-fire weapons.

- Company Team A
 - Initially in B1.
 - Prepare B41.
 - Reconnoiter BPs B5 and B14.
- Company Team B
 - Initially in B22.
 - Prepare B13.
 - Reconnoiter BPs B2, B14, and B7.
- Company Team C
 - Initially in B8.
 - Prepare B9.
 - Reconnoiter BPs B17 and B18.

On the basis of his mission analysis and war gaming with the S3 and FSCOORD, the task force commander fits his company teams to the terrain. The TF commander identifies battle positions in depth and further refines his concept of the operations. Included in this concept are targets critical to the force and guidance on where and when to mass fires, both direct and indirect. The commander will identify these critical targets with the target numbers allocated to this task force and disseminate them to subordinate elements and fire support units.

As a result of this concept, the TF commander has distributed his assets as shown in figure 5-6:

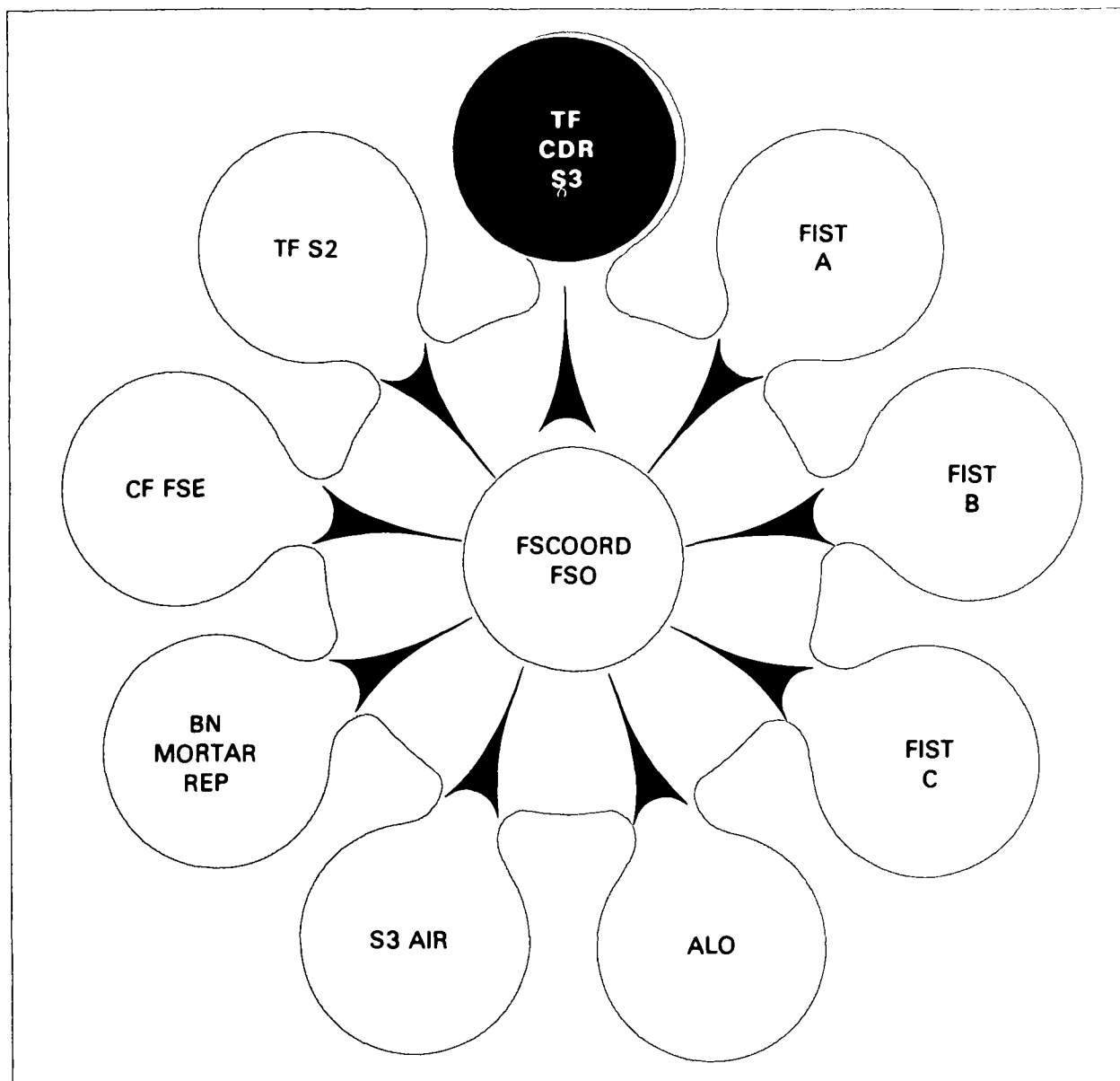
FSCoord Activities. The FSCoord's contacts in the planning and coordinating of fire support are shown in figure 5-7.

The FSCoord for the battalion TF is the commander of the DS FA battalion. The FSO at the maneuver battalion, in this case, becomes the assistant FSCoord. The

FSCoord works directly with the TF commander to insure that fire support is properly coordinated and contributes as much as possible to the combat power of the TF.

The FSCoord must aid the commander in determining fire support tasks to be accomplished at TF level, recommend the

FIGURE 5-7. TASK FORCE FIRE SUPPORT CONTACTS IN CFA.



best way to accomplish these, pass on assets and guidance to the FIST chiefs, and evaluate and resolve conflicts. He then refines the plans and requests of the FIST chiefs and passes all targets to the appropriate fire support delivery means.

Fire Support Planning for a Covering Force Battalion. Most fires here will be delivered in direct support of engaged maneuver companies. In the covering force area, maneuver company teams normally will be assigned defensive sectors delineated by company boundaries. Fires supporting engaged company teams are planned by the FISTs on the basis of guidance from the TF commander, the FSCoord, and his company team commander.

To support the task force's battle positions, the TF FSCoord will be especially interested in:

- Fires delivered on enemy forces beyond the direct-fire range of company teams.
- Massed indirect fire to destroy large concentrations of enemy forces.
- Fires, including smoke, to cover the disengaging and repositioning of maneuver elements.
- Fires to cover obstacles in the task force sector.

Fire support assets available at TF level include:

- the battalion mortar platoon,
- DS FA battalion (one 8-in and two 155-mm batteries),
- covering force GS FA fires, and
- additional support from main battle area FA battalions within range.

The battalion mortars will be used almost exclusively in close support of engaged companies. The platoon will be placed in GS of the battalion with priority of fires given initially to Company Team A. The company mortar fires from Company Team C (mech) will be planned and controlled by the FIST chief of Company Team C.

All mortars should be positioned in defilade, hardened as well as possible, and should be prepared to move by echelon to thoroughly reconnoitered alternate positions.

The DS FA battalion will also provide close support fires for maneuver companies. The FSCoord, however, must concentrate on planning fires on targets critical to the battalion. He must insure that the following FA fires are planned:

- massed fires of battalions on potential chokepoints and assault areas,
- fires on approach routes beyond the direct-fire range of the company teams, and
- fires to cover disengaging and repositioning of company teams.

The TF commander, S3, and the FSCoord identify these targets and assign them target numbers. The FSCoord then forwards these target numbers to the DS battalion FDC for planning. Those targets falling into company team sectors are immediately coordinated with the appropriate FIST.

Positioning. The DS battalion is positioned in depth with range beyond the LC not exceeding the target acquisition range of the force. Primary positioning considerations here are protection, ability to mass and shift fires, and keeping displacements to a minimum. Units must displace quickly along previously reconnoitered routes. Batteries should have from 2 to 5 km of lateral

separation between them. Displacement within battalions normally will be by echelon.

Close Air Support. Although CAS sorties seldom will be distributed to covering force area battalion task forces, these units must request and use CAS when appropriate targets appear. FSCOORDs must look for likely chokepoints where armor units will mass. Details such as how the CAS will be requested, who will control the strike, and

how the target will be marked must be worked out in advance between the FSCOORD, the TACP, and the FISTs.

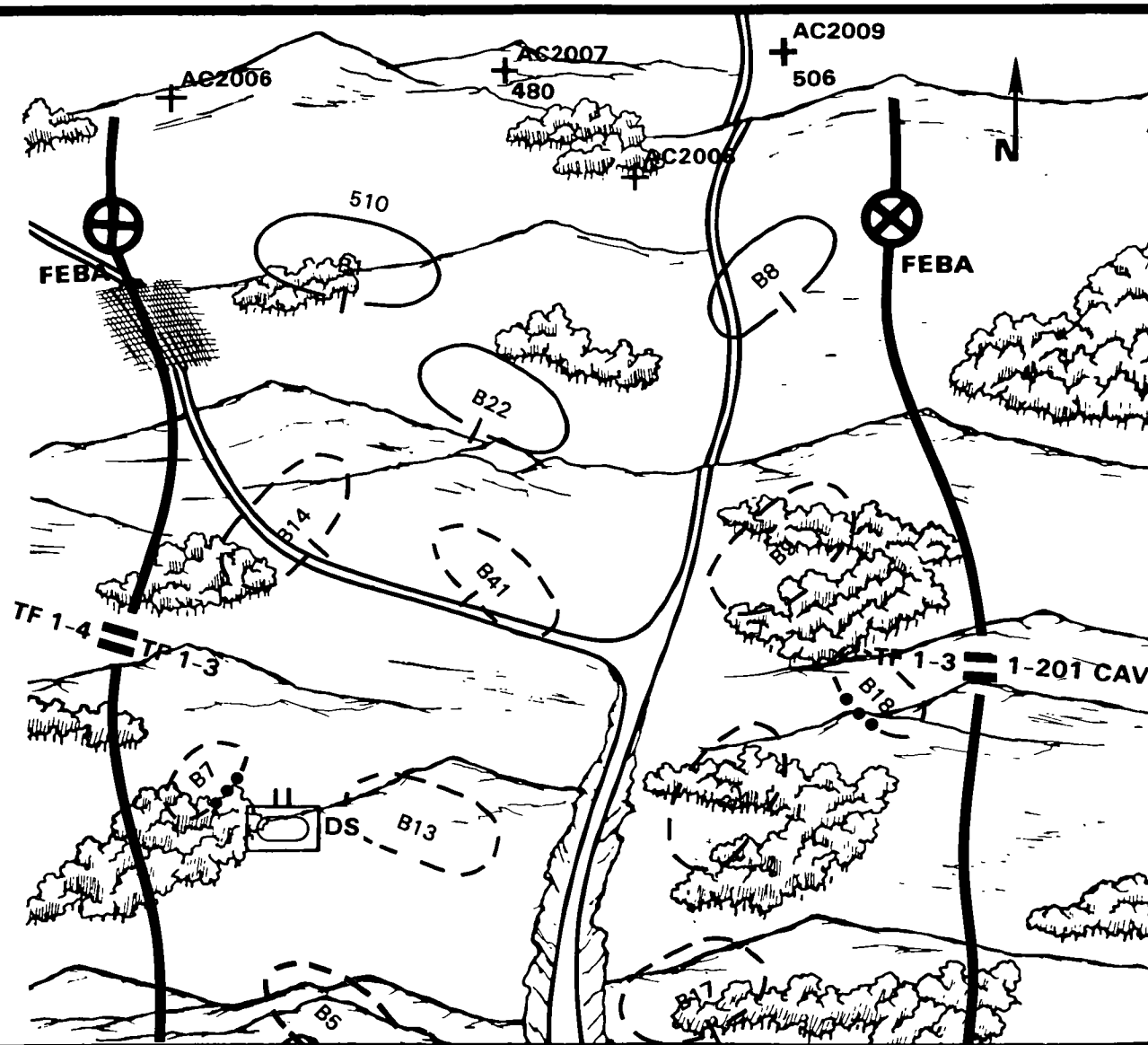
Fire Support Coordination. In the covering force area, each battalion TF should establish its own coordinated fire line. The FSCOORD must work closely with the battalion TF commander to insure that the coordinated fire line is established, distributed, and that it is kept as close to the forward units as possible to insure more

responsive and effective fire support. When the battalion commander, S3, and FSCOORD completed their major planning activities, the commander assembled his company team commanders and key personnel to issue the operation order (previously the company teams were issued a warning order and had just completed movement into the critical battle positions). Here is a portion of the TF commander's guidance to the Company Team A commander.

"Teams A, B, and C will be defending initially from BPs B1, B22, and B8, respectively. I recommend that you use the mech platoon on Hill 510 to provide flank security. Engage the enemy at long range. When he gets within direct-fire range, integrate FA and mortar fire to slow him so you'll have more time to engage him with tanks and TOWs. However, be careful that smoke from indirect fires does not obscure your direct-fire targets.

"I have planned Targets AC2006, AC2007, AC2008, and AC2009. You'll need to determine what other targets you need as the enemy gets closer to you and to support your disengagement. Have your FIST chief give these targets to the FSO as soon as you approve them.

"As the enemy approaches the road junction, be prepared to move to BP B41 and continue the fight along the road. Team B in BP B22 will overwatch your movement. In the event the enemy approaches from the west and you can't handle him, be prepared to move to BP B14 to block. From BP B41, I expect you'll move next to BP B5. I'll get further instructions to you as things develop."



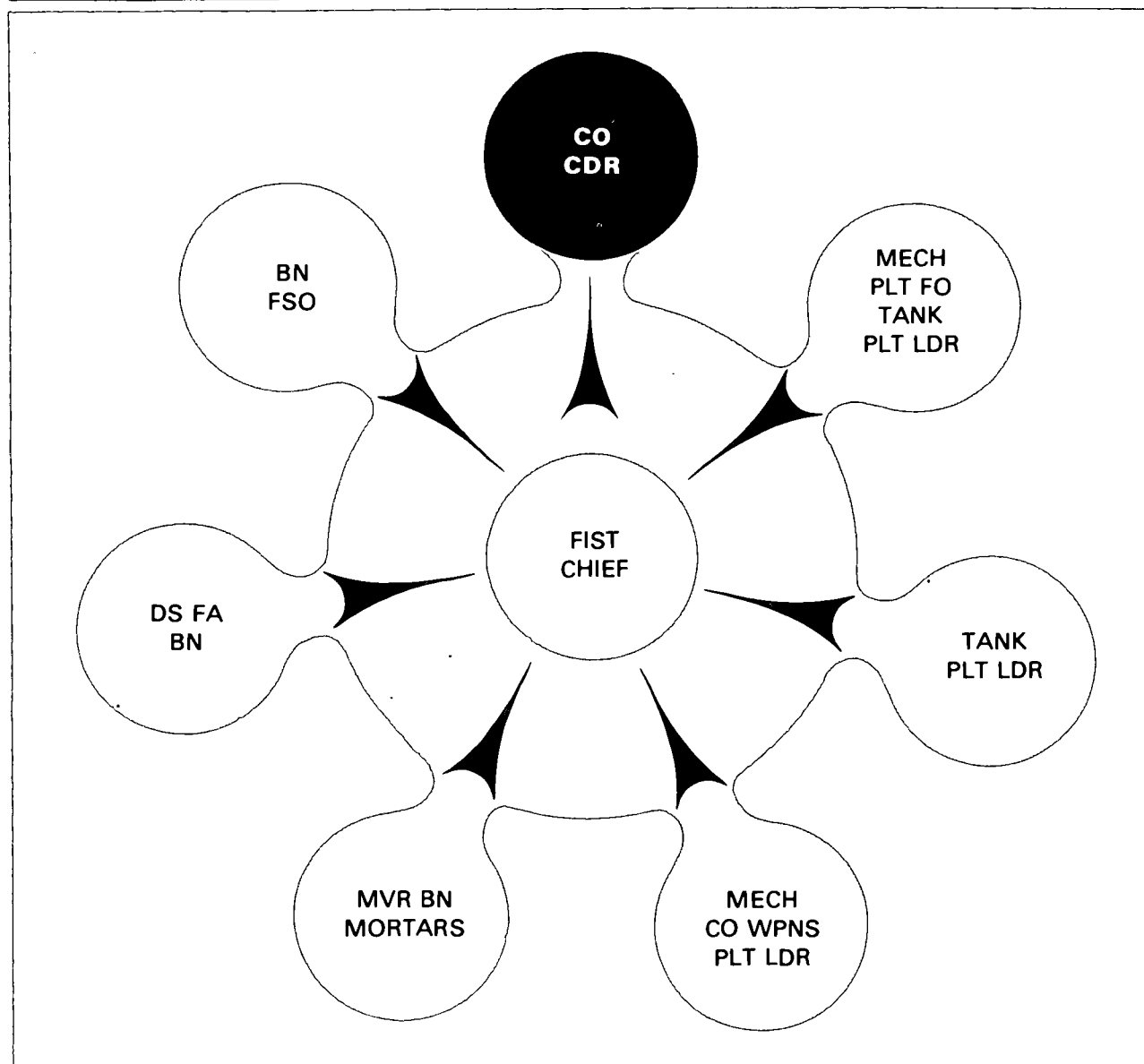
FSCOORD Activities. The FSCOORD at company team level is the FIST chief. He works directly with the company commander to insure that fire support is planned and coordinated to generate the greatest combat power possible from the company team.

He also works very closely with the battalion FSO, who provides guidance and

direction to insure that the entire battalion is getting the most benefit from the firepower available. These and his other contacts are shown in figure 5-8.

When the battalion plans have been formulated, the battalion FSO informs the company FIST chief of additional battalion critical targets in Company Team A's

FIGURE 5-8. FIST CHIEF FIRE SUPPORT CONTACTS.



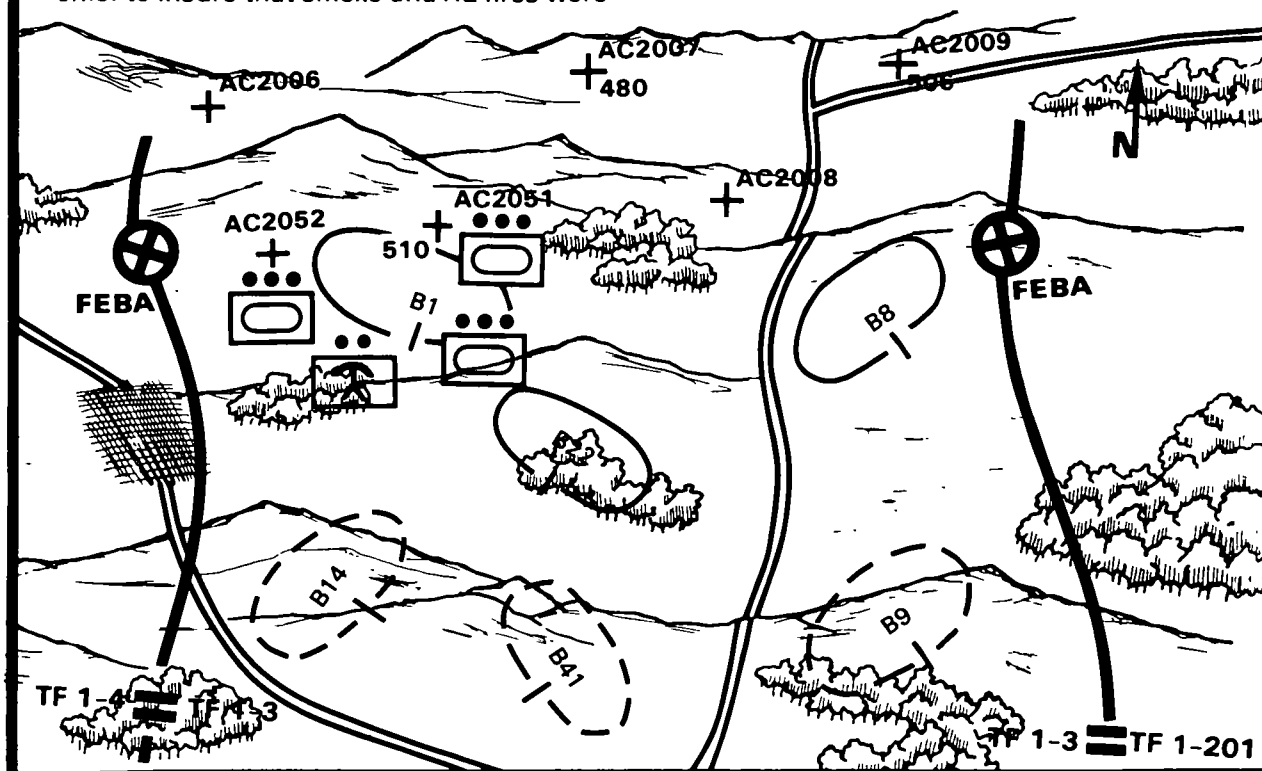
vicinity and directs fires be planned along the east flank.

The company team commander and the FIST chief analyze their situation and expected enemy actions to determine their battle plan. The FIST chief is primarily interested in the following fire support tasks:

- Cover obstacles.
- Obscure and suppress enemy overwatch positions.
- Deny the enemy free use of covered routes of approach and assault positions.
- Blind, slow, separate, and isolate advancing enemy elements so they spend more time in our best direct-fire engagement areas.
- Aid friendly forces in disengaging and repositioning.

When the battalion commander departed, the company team commander and his FIST chief (who was present for the battalion commander's instructions) further analyzed the situation. The company team commander decided to put the mech platoon on Hill 510 to provide security and early warning to the west, the two tank platoons on BP B1, and the AT section between BP B1 and Hill 510. The company team commander directed the FIST chief to insure that smoke and HE fires were

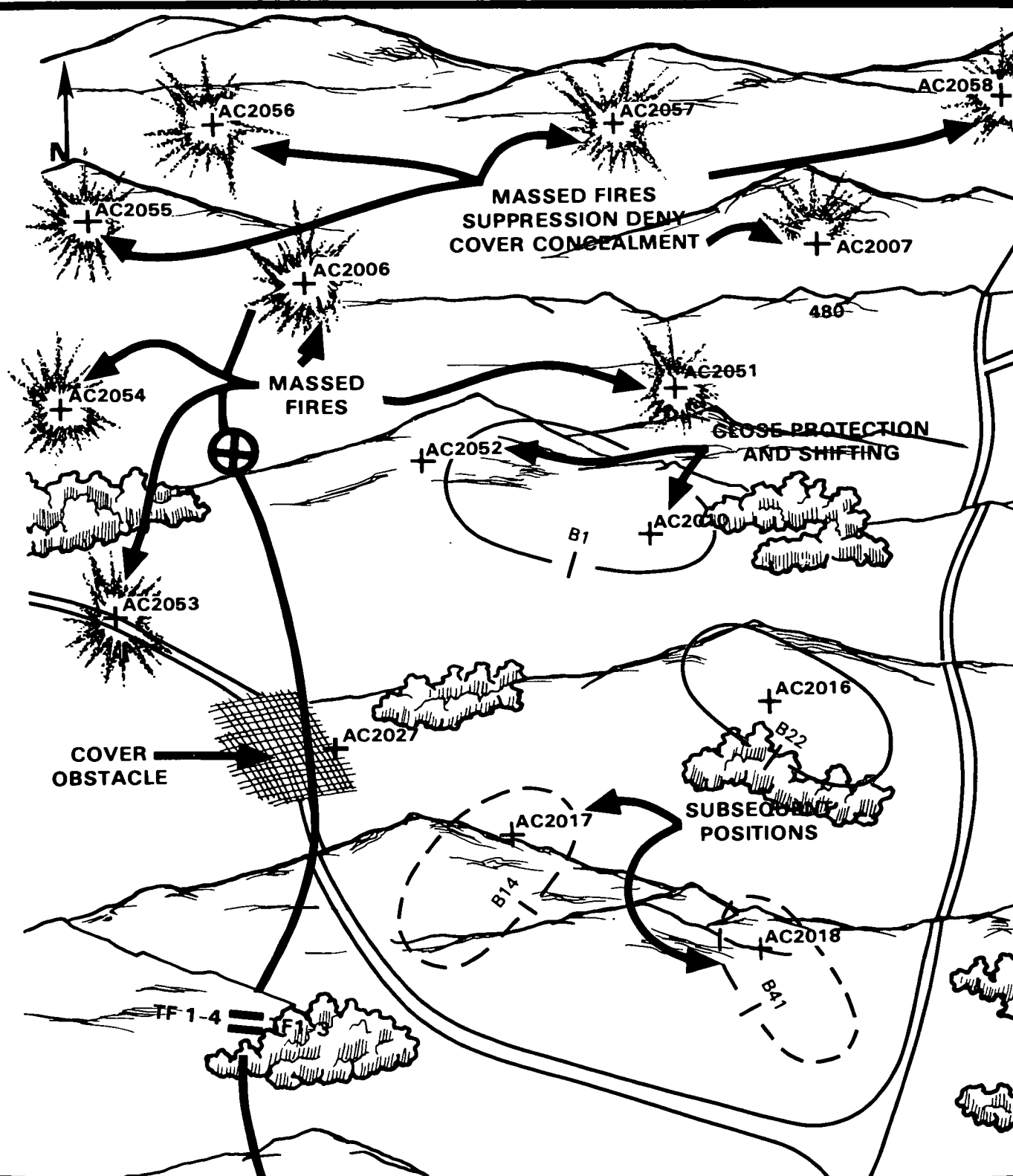
planned to facilitate disengaging to BP B41 and BP B14 to support the fight from those battle positions. The FIST chief planned targets forward of BP B1 and on Hill 510 (AC2051 and AC2052, respectively) as well as several additional targets north and west of Hills 480 and 510 to engage the enemy as soon as he is acquired. Otherwise, he felt that the TF targets were sufficient and would be used to shift fires as required.



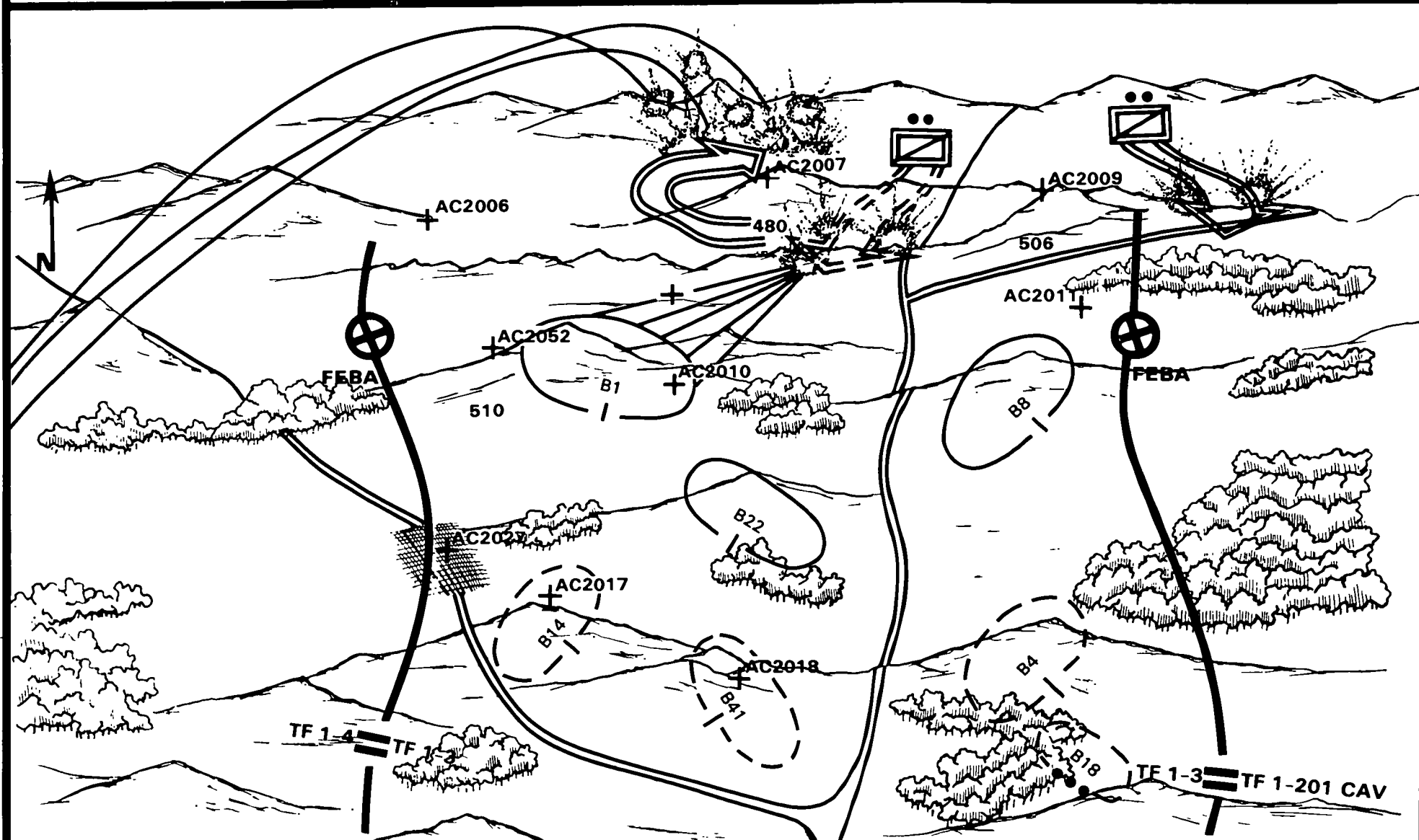
The company team commander and the FIST chief examine each of their subsequent positions back to the FEBA and refine the fires for each. They also consider what modifications will be necessary if the plan does not develop as expected. The FIST chief then finalizes the company team targets, sends those added to the TF FSO, and disseminates them to each platoon leader and platoon FO.

Included in the fires planned to support the initial engagements were:

- Mass fires to engage the enemy as soon as he is acquired (Targets AC2056, AC2057, AC2058, and AC2055).
- Suppressive fire target on Hill 480 (AC2007).
- Mass fires to continue the engagement with the enemy as he moves closer to the battle position (Targets AC2053, AC2054, AC2006, and AC2051).
- Targets to provide close defensive fires, if needed, and for shifting to cover other possible areas of enemy approach (AC2052 and AC2010).
- Target to cover the obstacle (AC2027). Targets on subsequent position for close defense and for shifting fires (AC2017, AC2016, and AC2018).



The following is an example of how the covering force fight by Company Team A, 1-3 Armor, might develop:



The enemy leads with reconnaissance elements including motorcycles, three BMPs, and four BRMD-2 scout cars. When the reconnaissance elements come into view, the company team commander notifies the task force commander and receives permission to let them come within tank main-gun range so they can be effectively and simultaneously destroyed. He assigns the motor-

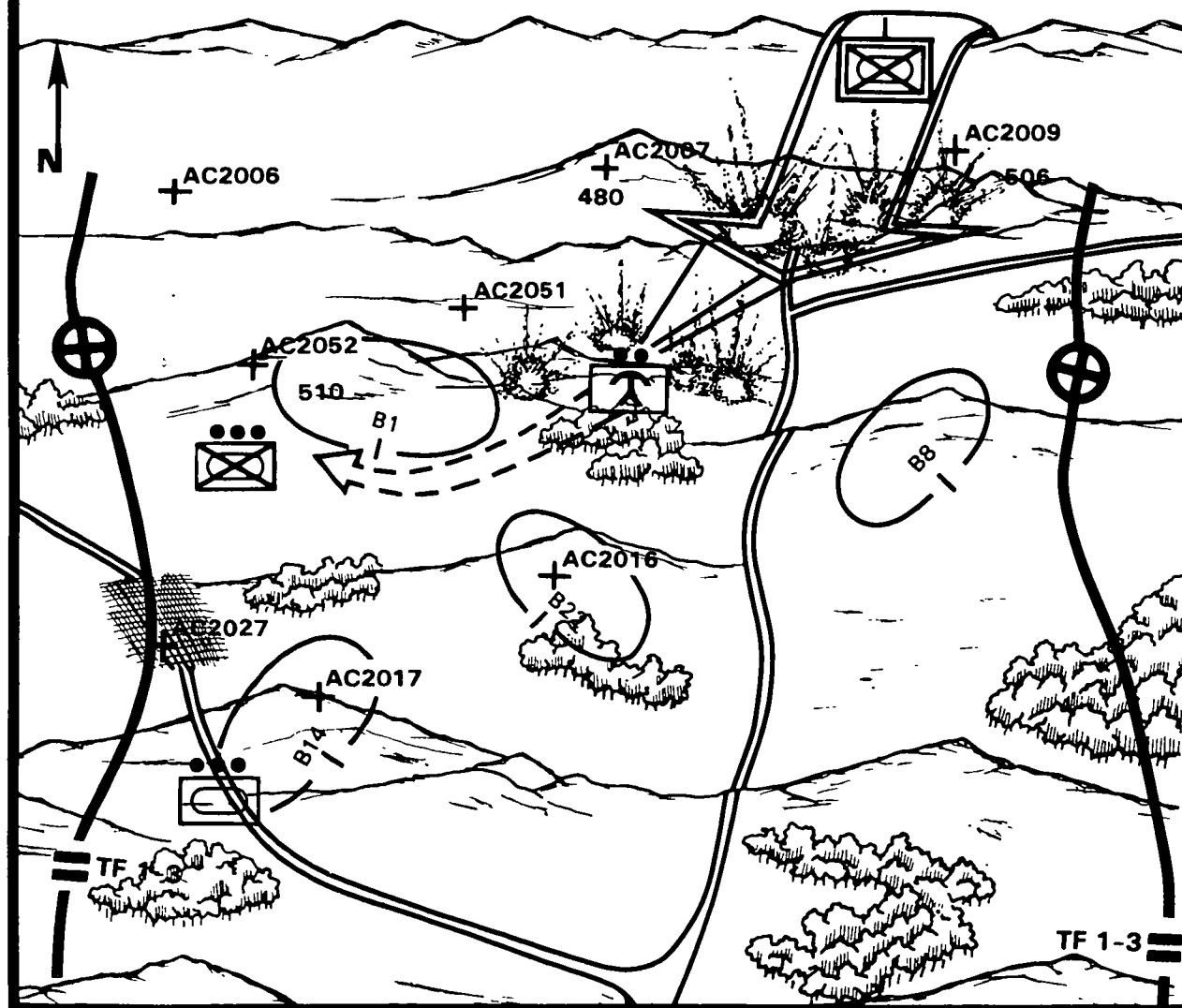
cycles to the FIST, the BRDM-2s to one tank platoon, and the BMPs to the other tank platoon. TOWs will engage those BMPs or BRDM-2s which are not destroyed by the tanks. The mech platoon will engage the motorcycles. At the opportune moment, the commander directs "fire." The ensuing brief, violent action destroys the motorcycles, two BMPs, and three BRDM-2s. The remain-

ing enemy elements seek cover and concealment behind Hill 480 where they are continually engaged by indirect fires (Target AC2007). In the meantime, the FIST chief with Company Team C, observing other reconnaissance elements in the vicinity of Hill 506, engages them with HE by shifting from Target AC2009.

About 2 to 3 hours after engaging the reconnaissance elements, a reinforced motorized rifle company is observed by the FIST chief, and it is attacked using HE, VT, and DPICM by shifting from Target AC2007. This forces the deployment of the enemy company. At 3,000 meters, the TOW section engages and destroys several tanks and BMPs. Other enemy tanks and BMPs firing HE rounds and enemy artillery force the mech platoon and TOWs to seek cover on the reverse slope of BP B1 and Hill 510. The FIST continues to engage the enemy forcing him to seek cover and concealment and to organize a hasty defense around Hill 480.

The task force commander realizes that he is engaging the regimental advance guard and that the remainder of this body will be approaching within 30 minutes. He alerts his company team and advises them to watch for an envelopment.

Because the enemy is occupying Hill 480 and is best able to support an attack coming from the west side of his sector, the task force commander directs Company Team A to move a tank platoon to BP B14. The team commander also moves his mech platoon to this new battle position, but keeps one carrier team on Hill 510 for security.

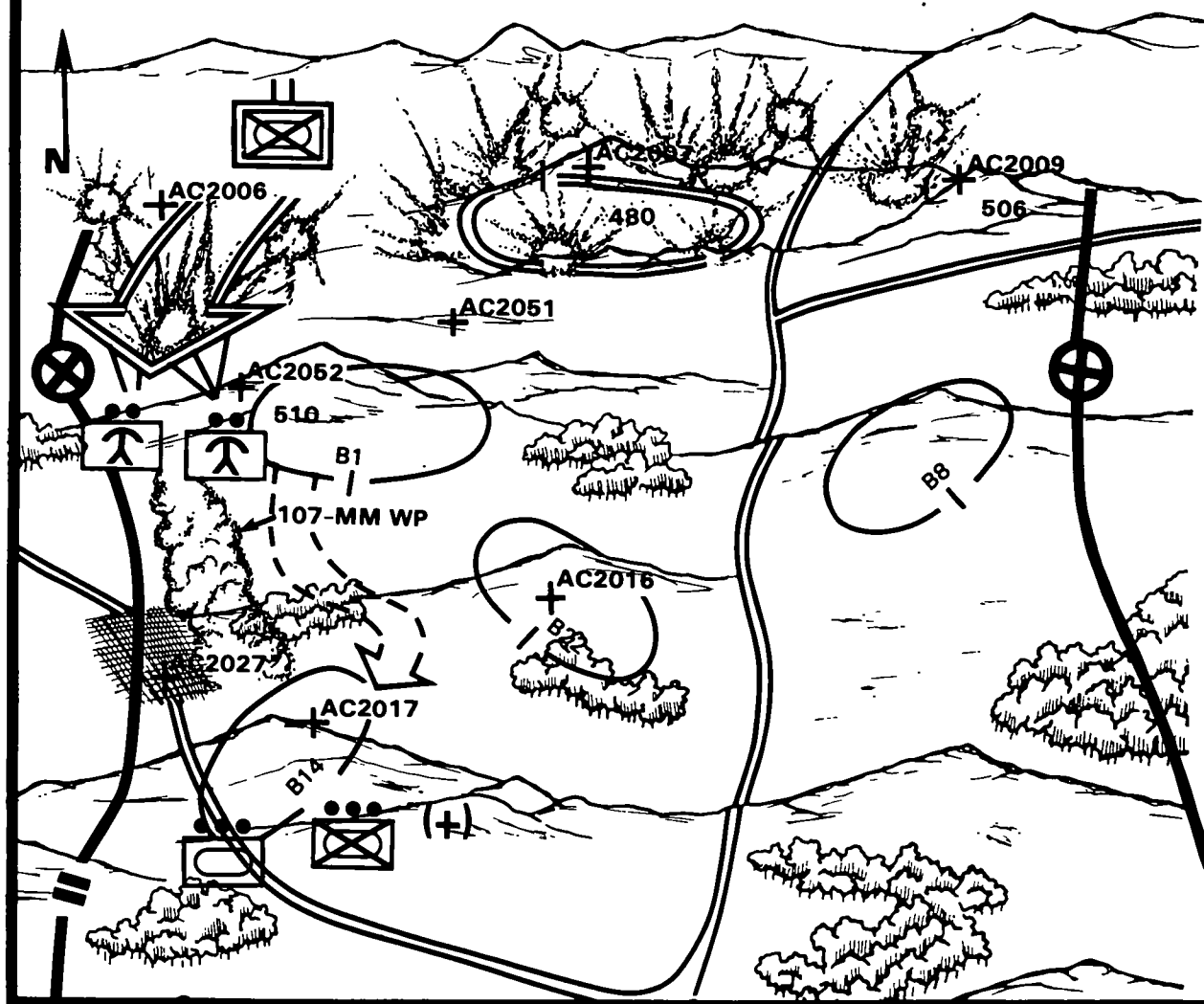


Approximately 35 minutes after engaging the motorized rifle company, the motorized rifle battalion appears northwest of Hill 510. These elements are engaged by DPICM called for by the FIST chief. The task force commander detaches the AT section from Company Team B and attaches it to Company Team A for the fight. These two TOW sections engage the enemy as he comes within range.

The motorized rifle battalion is attempting to envelop Hill 510 from the west in the direction of BP B14. The company team commander requests and receives permission to move his remaining elements to BP B14 to block. The task force commander directs the

FSO to maintain fires on enemy elements located behind Hills 480 and 506 to preclude attack or support by these elements.

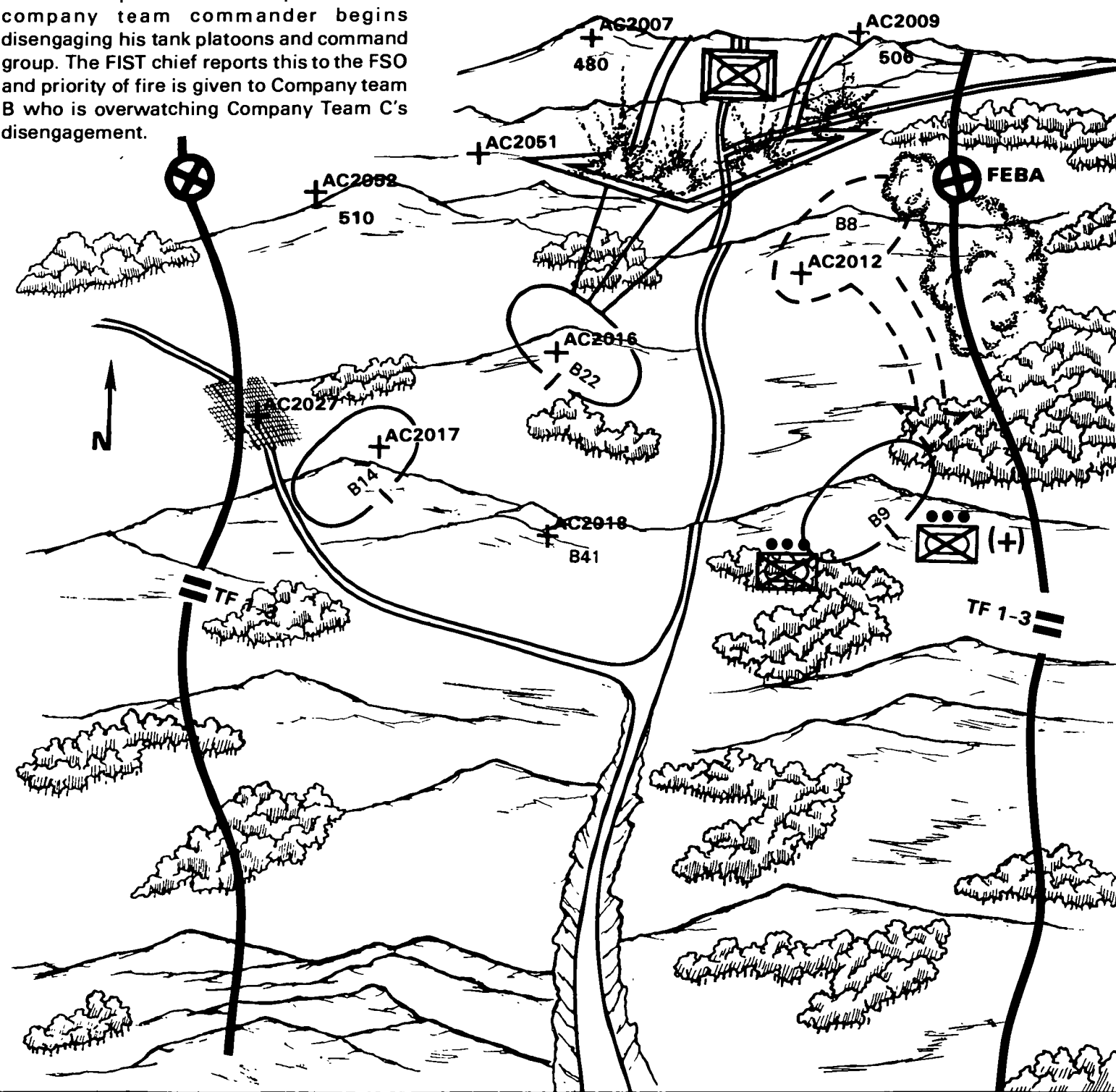
To screen the movement of Company Team A (-) to BP B14, the FIST chief calls for 107-mm WP, shifting southeast from Target AC2052. Furthermore, he directs the mech platoon FO, now in BP B14, to continue indirect fires on the motorized rifle battalion while the FIST chief moves with the company team commander to BP B14. The AT section, formerly with Company Team B, repositions on the northwest side of BP B22 while the remaining Company Team A elements reposition within BP B14.



Thus far, the task force has been successful in stopping the motorized rifle regiment advance guard. However, approximately 2 hours after engaging the advance guard, intense enemy artillery fires begin falling throughout the forward portions of the task force sector. The TF commander alerts all subordinate elements that this is the prelude to an attack by the motorized rifle regiment main body. This motorized rifle regiment should consist of two motorized rifle battalions, a tank battalion (minus one company), regimental artillery, and other combat support elements. Let's take up the fight and see how Company Team C disengages and moves to BP B9.

As in the case of the advance guard engagements, the FIST calls for indirect fires as soon as the enemy appears on the horizon. He also requests that Company Team C be given priority of indirect fire. As the motorized rifle regiment (-) approaches within direct-fire range, TOWs and then tanks are added to the fight to support the movement of friendly elements from BP B8 to BP B9. The FIST chief calls for a smokescreen to the southeast of BP B8, using the company team's 81-mm mortar section. He also calls for a 155-mm battery to fire hexachloroethane smoke in the same area (his reconnaissance indicated that there was sufficient terrain masking in the west so that no screen was required there). The company team commander repositions his AT section to provide overwatching fires in conjunction with those from Company Team B. He also repositions the mech platoon to the right rear of BP B8 to provide security. While this occurs, the tank platoons maintain a high volume of accurate fires in order to develop a mobility advantage over the enemy (of course, obstacles and indirect fires do this also). The FIST chief continues to call for fires for this same purpose, being careful that he does not obscure the enemy tanks from the view of friendly tanks. When the AT section

and mech platoon are in position, the company team commander begins disengaging his tank platoons and command group. The FIST chief reports this to the FSO and priority of fire is given to Company team B who is overwatching Company Team C's disengagement.



Principles Applied:

- The enemy was engaged with indirect fires as soon as he was acquired.
- The enemy was slowed to permit longer target-servicing time and to gain a mobility advantage during the disengagement.
- FIST chiefs were careful not to obscure the target area from direct-fire weapons.
- Enemy overwatch positions were suppressed.
- Screening fires were used to provide concealment where cover and concealed routes were not available.
- Priority of fires was changed as required.

□ Handoff of Battle to Main Battle Area Forces

The method of handoff of control of the covering force battle, now under control of the brigade commander, to the main battle area forces depends on the *factors of mission, enemy, terrain, and time, especially the enemy and terrain*. Ideally, the covering force battalions should maintain pressure on the enemy as long as possible so that the enemy cannot reestablish his momentum and bring supporting forces and equipment close to the FEBA. The disengagement and passage of lines by the covering forces will be particularly difficult tasks considering the proximity of the enemy. Additionally, because the FEBA is selected for its defensibility, the difficulty of traversing rough terrain is added to the problems associated with a rapid passage of lines and may cause unwanted massing of friendly forces at a particularly vulnerable time.

The main battle area forces will take the enemy under fire at the greatest ranges possible to maintain pressure on the enemy, taking care that they engage only clearly identified enemy targets. The problems of fire distribution and discipline are particularly difficult when two friendly forces are close. As the covering forces begin to disengage and

their fires slacken, main battle area fires must increase in intensity.

Indirect fires play an extremely important role during the disengagement. This is because the terrain may limit the ability of main battle area forces to engage the enemy at the maximum effective range of their weapons. Indirect fires will be used to slow the enemy's advance thereby aiding the development of a mobility advantage for the covering forces. Besides those indirect fires called by the covering forces, the scout platoons of the main battle area forces should be requesting fires from their battalion heavy mortar platoon and the artillery supporting the brigade. As elements of the covering force disengage and move rapidly through previously reconnoitered passage lines, screening and obscuring fires must be used especially in areas where covered and concealed routes are not available or adequate.

It is not sufficient that the main battle area task force FSO simply plan and call for fires. It is inherent in his responsibility to coordinate with the covering force battalion FSO to insure that the commander's scheme of disengagement and passage, routes to be taken, recognition signals, CEOI items, the covering force battalion FSO's plan of fire support, and support required of the main

battle area battalion FSO by the covering force FSO are exchanged. In this way, timely, adequate, and coordinated fire support can be provided without endangering the converging forces.

5-7. How to Support the Main Battle Area

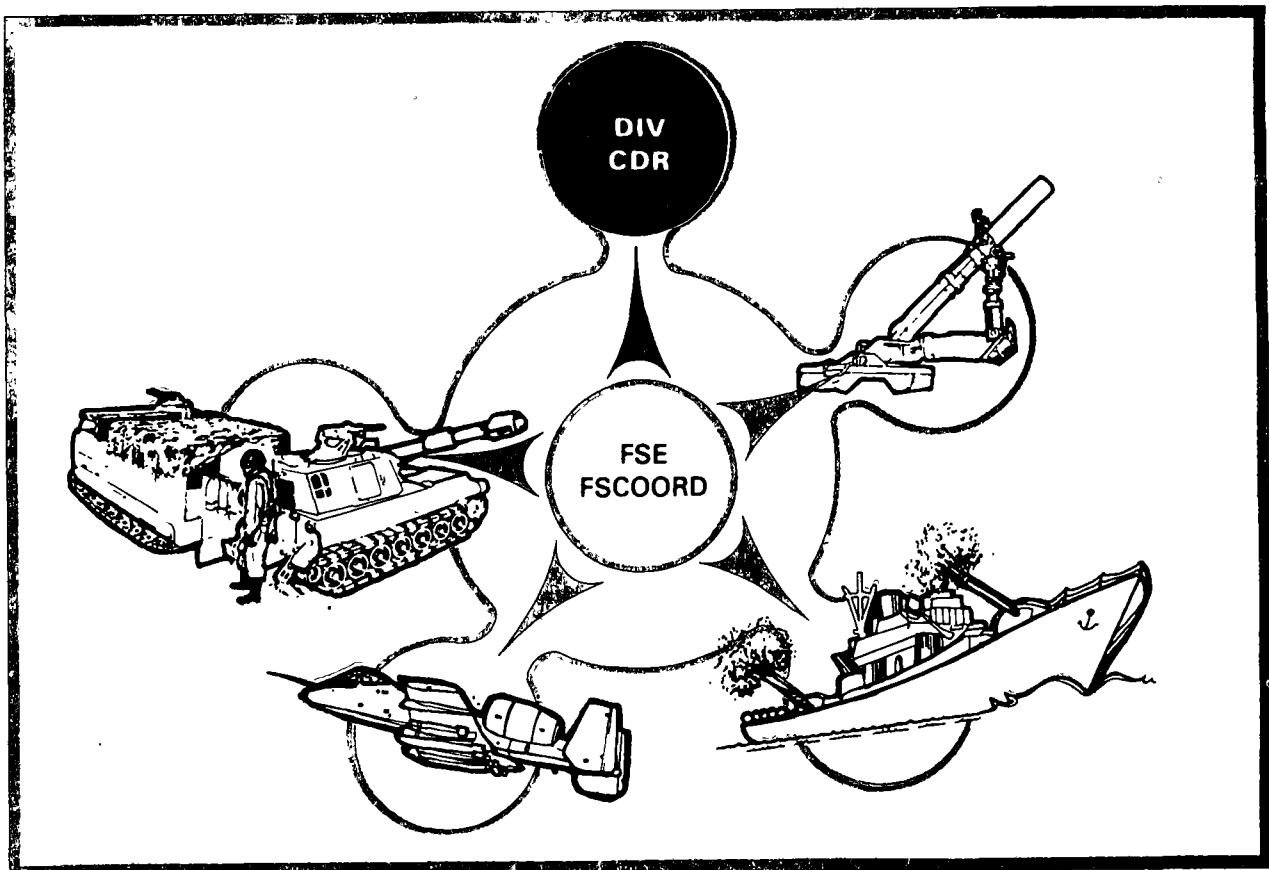
□ Deployment of Forces

The division deploys the bulk of its combat power in the main battle area to insure coverage of the most defensible terrain in the sector and to prepare for the decisive battle by the forward committed brigades. Mechanized infantry, tank, and fire support systems are allocated to the forward committed brigades to aid in accomplishing their mission of stopping the enemy within the main battle area.

A few maneuver and fire support assets are retained at division level to influence the

battle as it develops. If the commander can determine where in the main battle area the major battle will be fought (on the basis of restrictive terrain or accurate intelligence), he may weight that area before the battle begins. If, on the other hand, the terrain does not restrict the enemy's options or intelligence is less complete, the commander will deploy a relatively balanced force. After he determines the location of the enemy main thrust, he will concentrate forces at the critical time and place.

FSCoord Activities. Control of fire support in the main battle area is managed on behalf of the commander by the division FSCoord (the division artillery commander) and the division fire support element. All fire support systems, field artillery, close air support, naval gunfire, and mortars at lower levels are managed by the fire support element at each maneuver headquarters.



□ How to Support the Defense in the Main Battle Area

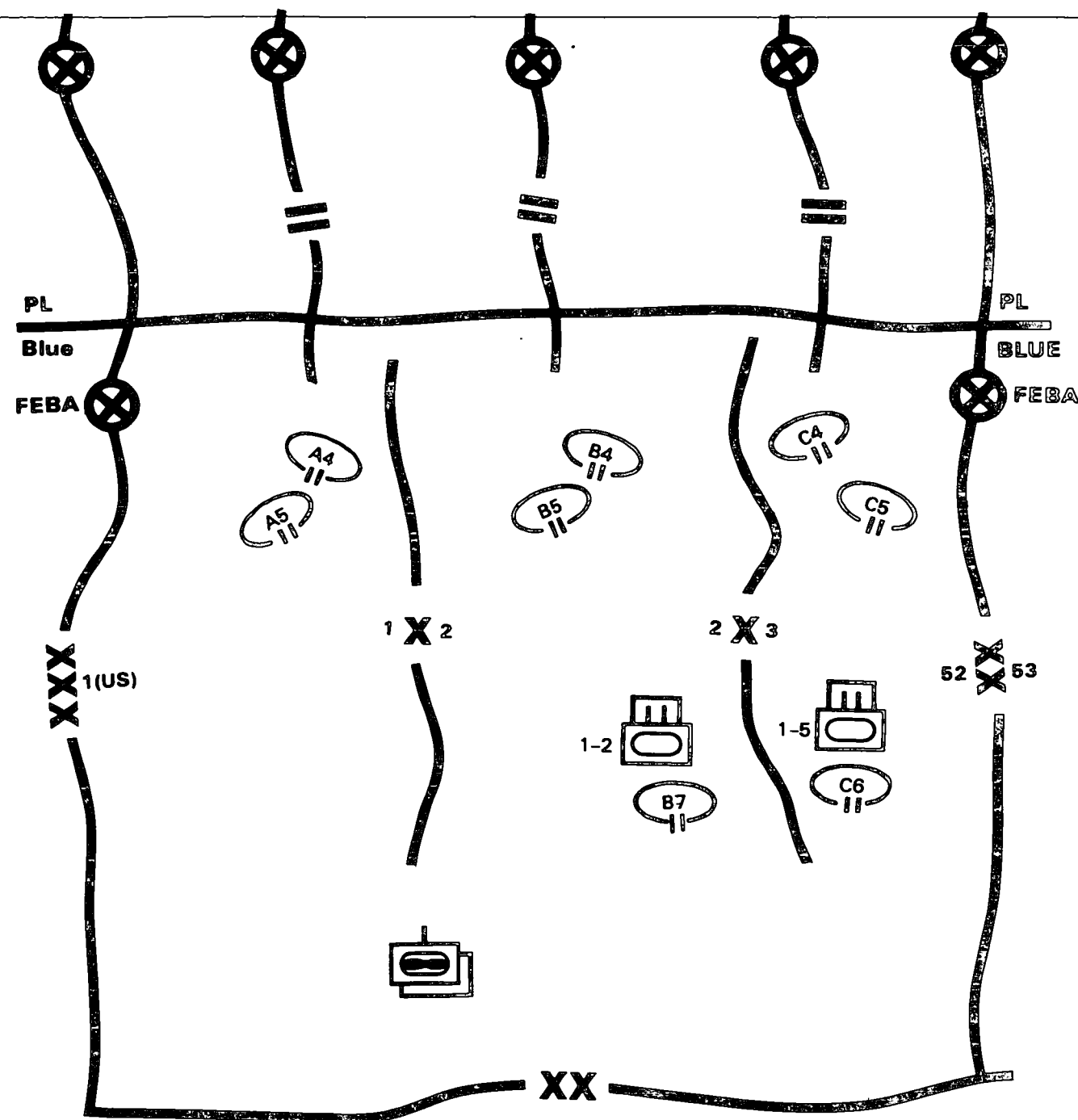
FIGURE 5-9. DIVISION DEFENSE OPERATIONS OVERLAY.

Reviewing the situation as established in paragraph 5-6:

A US mechanized division has received the mission to "defend in sector." At that time, corps attached the corps armored cavalry regiment headquarters and one squadron and a field artillery brigade to the division. All of these units were committed in the covering force area. The division has two attack helicopter companies from the organic combat aviation battalion.

The division is defending on relatively unrestrictive terrain and the current intelligence situation precludes determining the location of the enemy's main thrust prior to the battle. The commander expects the enemy may attempt a breakthrough with a combined arms army of up to four divisions—two in the first echelon and two in the second echelon. A fifth division, a tank division, may be held in reserve to initiate pursuit operations. The best avenue of approach is in the center sector, and it is most likely that the enemy will make his main thrust there. However, major elements of the enemy force could approach on avenues to the flanks of the center sector.

After analyzing his mission, the sector, possible enemy actions, and troops and fire support available, the commander allocated his forces. He provided two mechanized battalions in each brigade sector, four battalions to the covering force, and retained one tank-heavy task force in reserve. TF 1-5 Armor will be attached to 2d Brigade initially giving 2d Brigade three task forces. The other two brigades will have two task forces each. TF 1-2 Armor will remain in division reserve in its present location. TF 1-2 Armor will be attached to the 2d Brigade later if the situation dictates. The covering force will cause the enemy to mass for the breakthrough and provide the commander with significant information on when and where to concentrate for the decisive battle in the main battle area. The commander anticipates using covering force elements—both maneuver and fire support—to assist in concentrating in the main battle area to achieve the necessary combat power to defeat the enemy.



FSCOORD Activities. As FSCOORD for the division, the division artillery commander is responsible for coordination of fire support throughout the division sector. Through his representative in the covering force area (the FA brigade commander in our example) and through the G2 and G3, the division artillery commander follows the covering force fight very closely. His contacts and those of the division commander are shown in figure 5-10. Also shown are those agencies within each CP who are directly involved in fire support.

As main battle area FSCOORD, the division artillery commander must insure that CAS and the bulk of the FA assets are available to attack enemy forces as they mass to break through the main battle area.

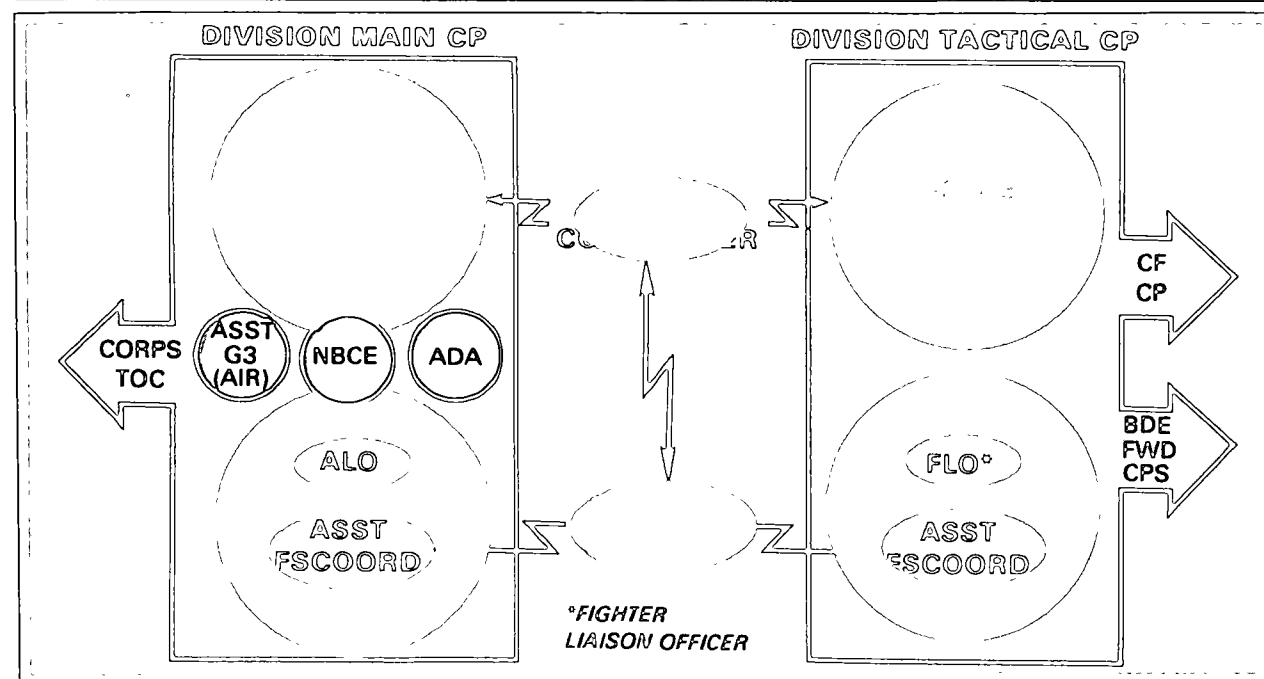
Just as the division commander will concentrate his maneuver forces at the decisive time and place, the FSCOORD must focus his fire support effort on the enemy main thrust wherever it occurs. At the same time, he must

retain some flexibility to shift support to the economy-of-force sector should a major threat develop there.

Long before the covering force fight begins, the FSCOORD develops recommendations for main battle area fire support. War-gaming the enemy main thrust against each brigade sector, he determines the following fire support tasks for the main battle area fight:

- ☐ Furnish close support fires to the brigades.
- ☐ Reduce the effectiveness of enemy supporting fires.
- ☐ Suppress enemy air defense.
- ☐ Cover obstacles in division zone.
- ☐ Fire on approaching enemy elements at maximum range possible.
- ☐ Isolate the enemy in the penetration.
- ☐ Mass fires to destroy massed enemy forces.

FIGURE 5-10. FIRE SUPPORT CONTACTS IN THE MAIN AND TACTICAL CPS.



FIRE SUPPORT ASSETS

FA: Recall that the field artillery assets at the start of the covering force action were:

For the Covering Force Area	For the Main Battle Area
HQB, 201 FA Bde • 1-43FA (8SP) • 1-300 FA (155 SP) • 1-301 FA (155 SP) • 1-302 FA (155 SP) • 1-303 FA (8 SP) • 1-404 FA (8 SP) • How Btry (155 SP), 1-201 Cav	HQB, 52 Mech Div Arty • Btry A (TAB), 112 FA • 1-40 FA (155 SP): DS 1 Bde • 1-41 FA (155 SP): DS 2 Bde • 1-42 FA (155 SP): DS 3 Bde

CAS: Corps will allocate a number of sorties to each committed division. The 52 Mech Div has 50 sorties per day for the main battle area action.

The three 155-mm battalions DS to main

battle area brigades were in supplementary positions forward of the main battle area. Batteries will rejoin their parent organizations. Then the 52 Mech Division Artillery will control the division artillery assets plus those of the attached 201 FA Bde.

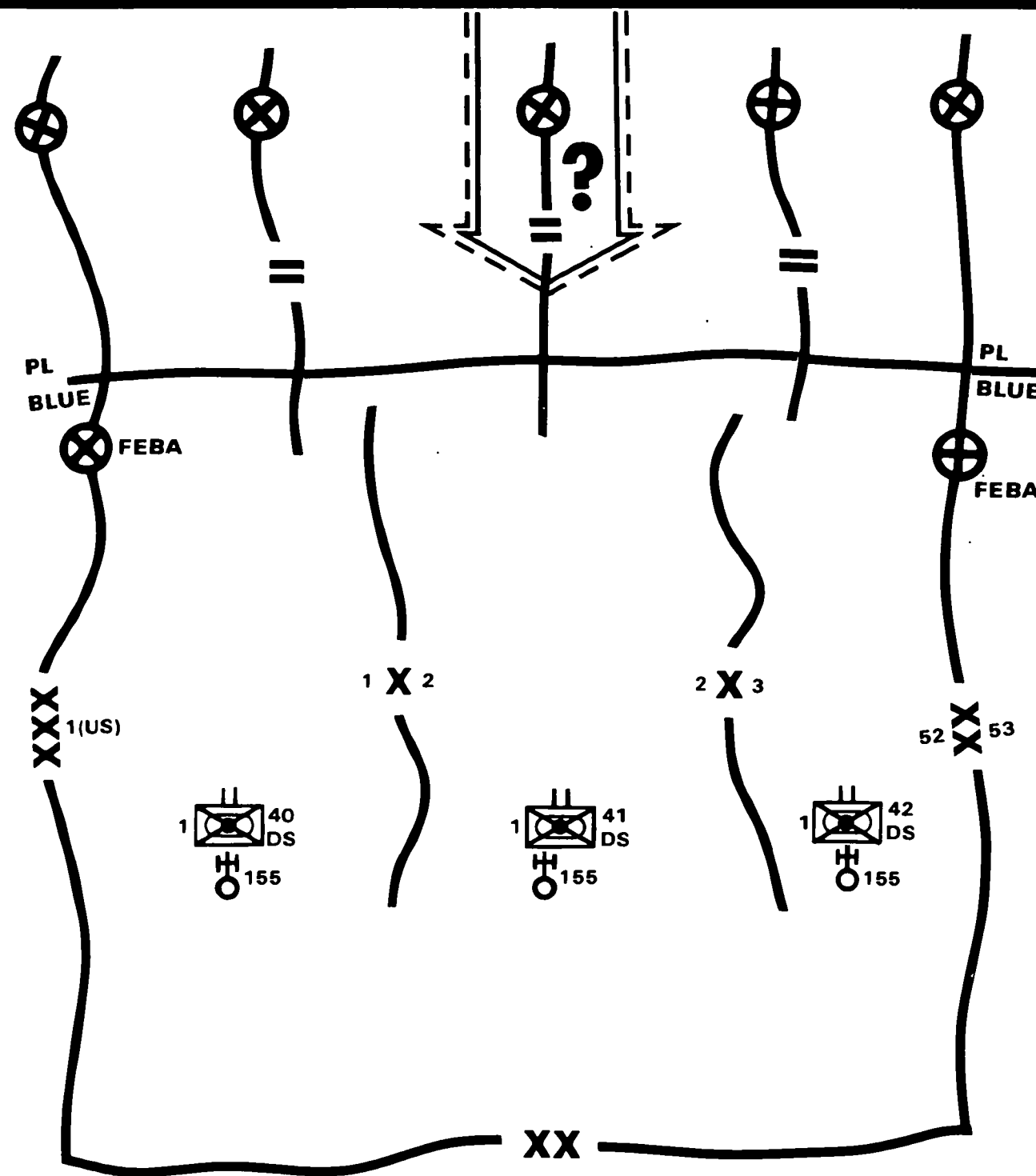
Commander's Fire Support Guidance.

After the division commander, G3, and FSCoord had developed the courses of action and analyzed them, the commander decided to organize the main battle area as shown here. He gave the following additional fire support guidance to the FSCoord:

"I am particularly concerned about the timely concentration of fire support for the breakthrough sector. We need to insure that our organization for combat is flexible enough to permit several options for folding in covering force field artillery to support the threatened main battle area sector.

"When we move to concentrate, units must already have a firm idea about where they're going to support the main battle area. We may have to change tactical missions quickly to do it another way, if necessary. At the same time, we have to retain a good counterfire capability throughout the main battle area.

"Holding most of the close air support at division will retain some flexibility for varying application in the area of concentration as well as the economy-of-force area. Keep abreast of the use of our attack helicopters as the situation develops to integrate necessary fire support in their operations."



Note: Diagram shows mission relationships—not positions.

Field Artillery Tasks. At division level, FA tasks include:

- **Massing the fires of several field artillery battalions on massed enemy forces;**
- **managing the counterfire program; and**
- **firing to suppress enemy air defense.**

Field Artillery Organization and Positioning. The key to understanding FA organization and positioning in the main battle area is that *they must accentuate flexibility before the enemy main thrust is identified.* After the main thrust has been identified, the primary goal is to position to gain the capability to mass and shift fires in the critical zone. While the fight in the covering force area is in progress, FA is fairly evenly distributed across the division sector. In the example case, each covering force task force/squadron has an FA battalion in direct support, each main battle area brigade has a direct support battalion, and the remaining battalions are in general support of the covering force.

If no enemy main thrust develops, the relatively even balance will continue into the main battle area. Main battle area brigades will be supported by habitual DS battalions. FA battalions back from the covering force area will be assigned R or GSR missions to main battle area DS battalions.

If a major thrust is identified, then the FA must be organized and positioned so that its fires focus on the major threat. Units must be positioned within range of critical areas so fires can be massed and shifted to new targets as they develop. The FA commander will have his staff plan for organization and positioning of FA units to support each main thrust contingency identified by the division G2.

Organization Options. There are several ways in which the FA can be

organized to support a division that must defend against a breakthrough attack. Points for consideration include:

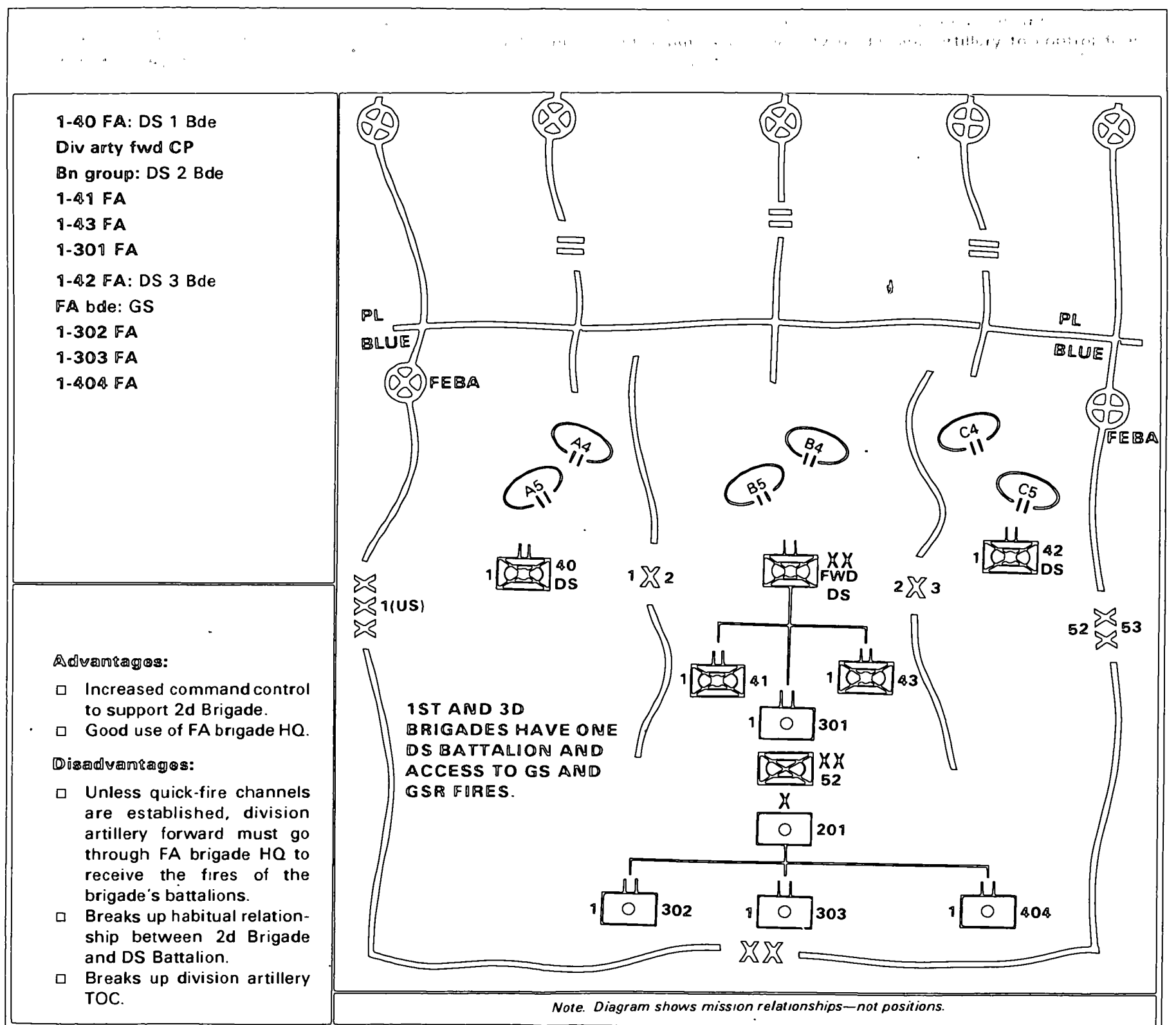
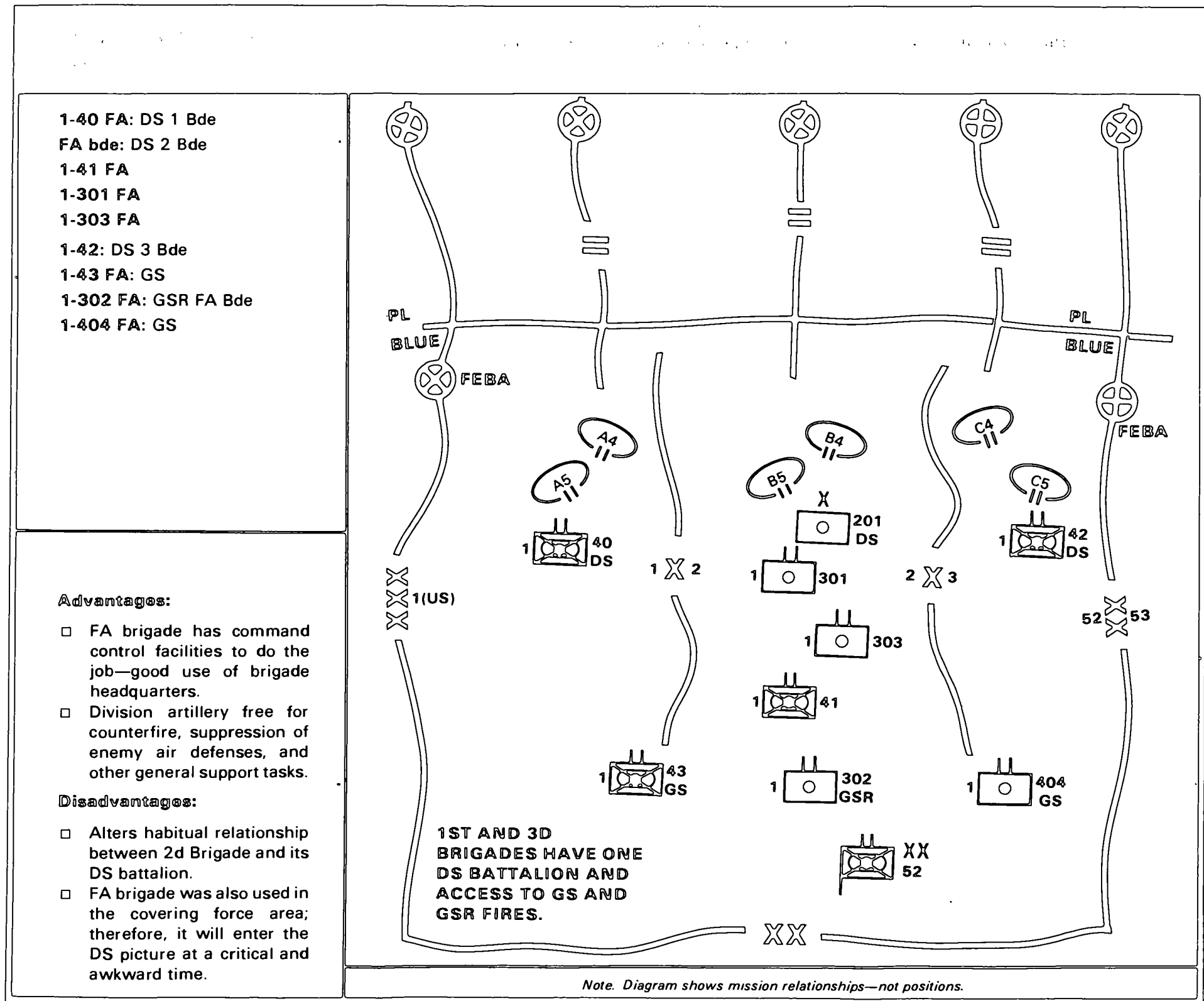
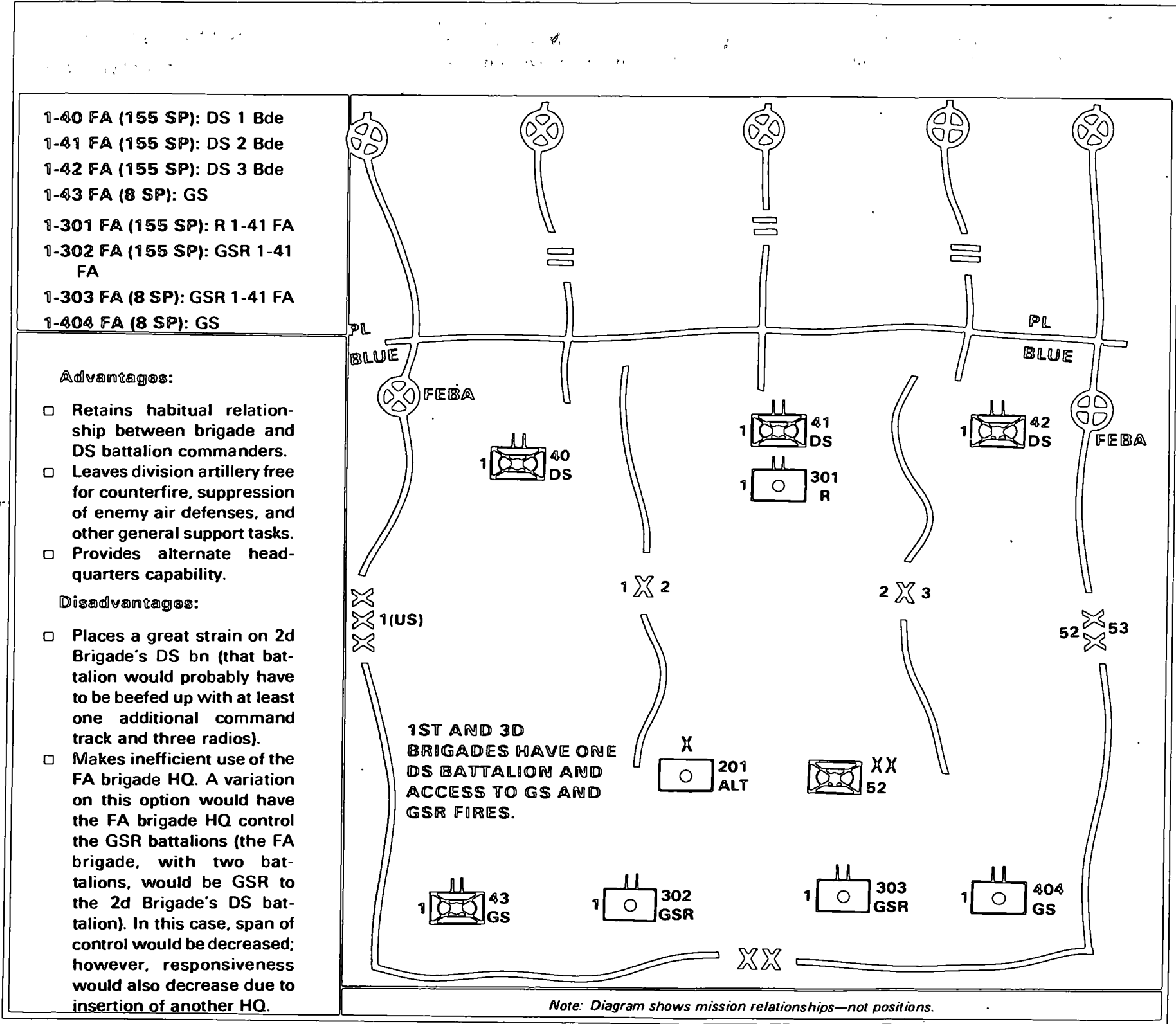
- **The total number of FA battalions available.**
- **FA Organization in the covering force area.** If covering forces are controlled by main battle area brigades, covering force FA will probably continue to support the same brigade in the main battle area as in the covering force area. If a corps- or division-controlled covering force is employed, FA supporting the covering force will come under division control after the covering force fight.
- **The availability of an FA brigade headquarters.** If available, this HQ may control FA in the covering force area or main thrust sector, or both.
- **The location of the main thrust (flank or center of the division sector).**

In our example, the covering force is controlled by division. In addition to the three FA battalions already deployed in the main battle area, an FA brigade HQ and four cannon battalions will be available for the main battle area fight.

Several organizational options can be used if a main thrust develops. Options 1, 2, and 3, on the following pages, are discussed in terms of a center (2d Brigade) main thrust, but could also be used in the 1st Brigade or 3d Brigade should the main thrust come there.

In this case, the 2d Brigade DS battalion has remained in control.

Commanders and FSCOORDs should weigh the advantages and disadvantages discussed and consider their own specific situation when organizing FA in the main battle area.



Positioning. If there is no enemy main thrust against the division, positioning of FA units will reflect a balanced distribution. If there is a main thrust however, the FSCOORD will probably recommend repositioning (fig 5-11) of field artillery to insure that maximum firepower can be placed on the most critical point.

Repositioning is an integral step in the division commander's massing of combat power. It requires a strong, integrated intelligence-gathering effort; an accurate, purposeful assessment of enemy intentions; and a will to act decisively.

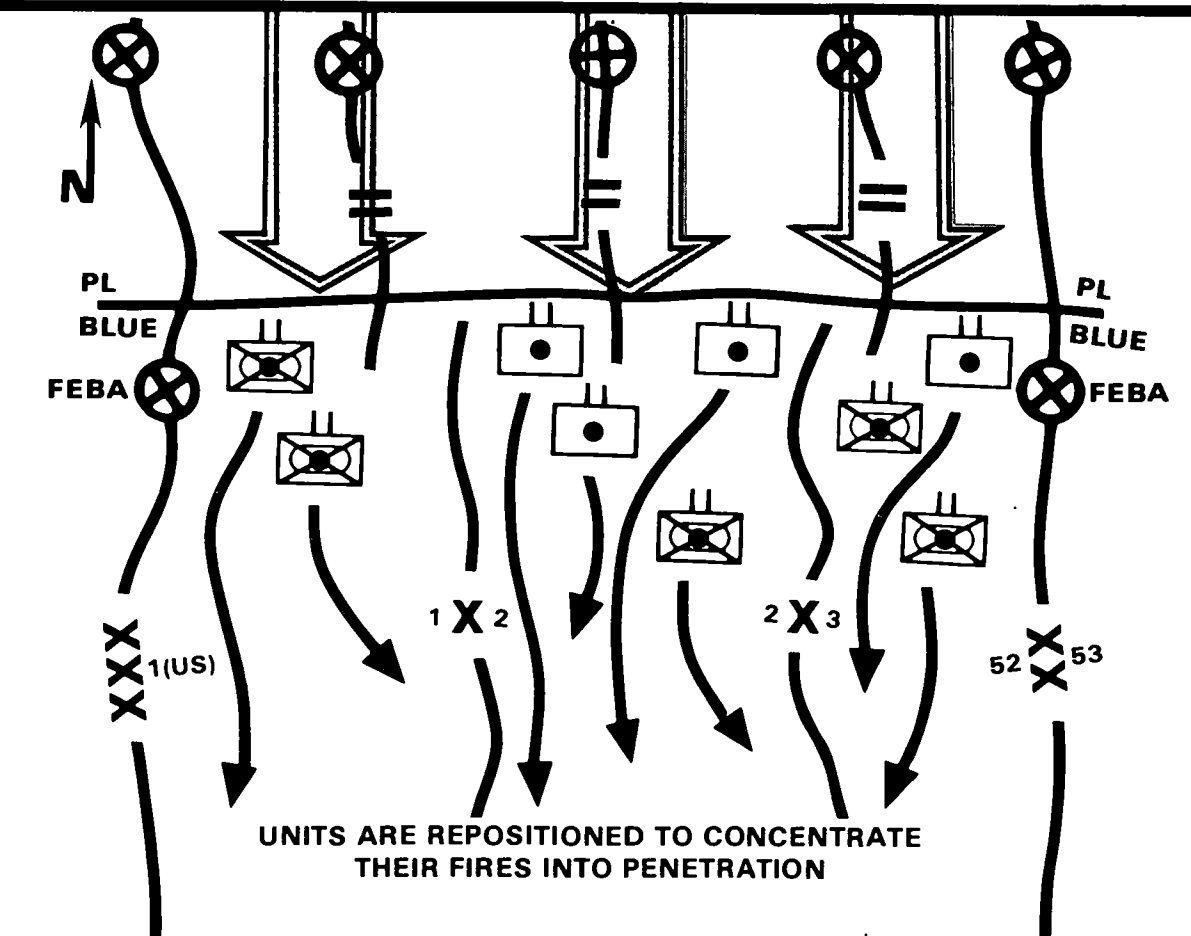
FIGURE 5-11. REPOSITIONING OF FIELD ARTILLERY.

Repositioning includes three actions:

FA units in the path of the main attack are repositioned early to the flanks of the developing penetration where they are little affected by the rearward movement of the fight.

FA units away from the main thrust are repositioned, essentially closing on the main attack and concentrating their fires into the penetration. Rapid moves are necessary to insure support is ready at the critical time.

In positioning of units, concentrate the impact point (range capability) of firing units, not the physical location of the units themselves.

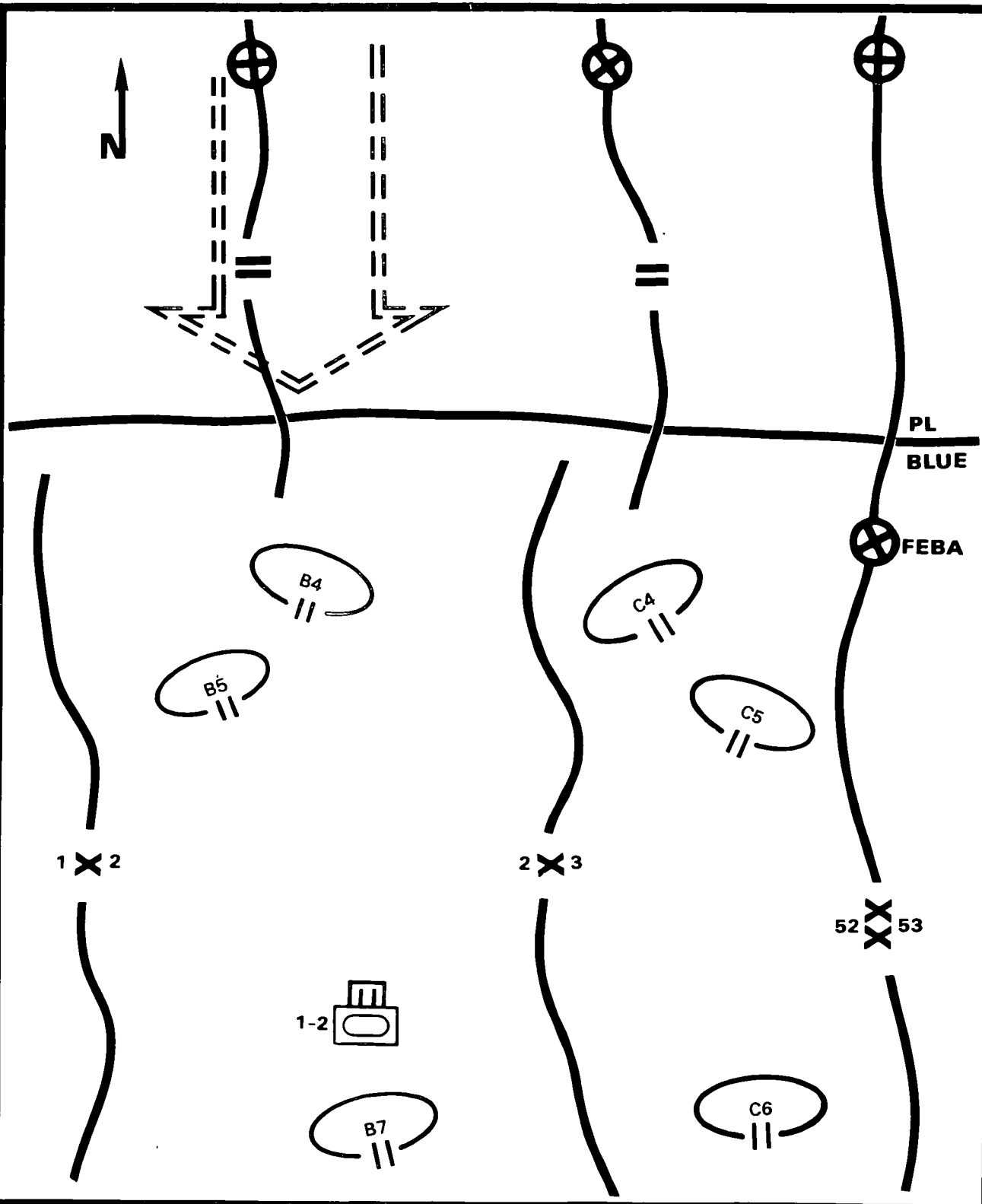


How to Support the Defense in the Main Battle Area

Returning to the example scenario, the covering force elements are now approaching Line BLUE (fig 5-7). All covering force FA units are now positioned in the main battle area. The responsibility for fire support of the covering force battalions is about to shift to the main battle area DS battalions. The division commander, based primarily on input from the covering force commander and the G2, has decided the enemy's main effort will be in the center against the 2d Brigade. Because of the FA brigade's continuing involvement in the covering force fight and because the 2d Brigade's habitual DS battalion has prepared meticulously for the main battle area fight, the div arty commander recommends that option 1 be adopted.

FIELD ARTILLERY SUPPORT ASSETS FOR 2d BRIGADE

1-41 FA (155 SP): DS 2 Bde
 1-301 FA (155 SP): R 1-41 FA
 1-302 FA (155 SP): GSR 1-41 FA
 1-303 FA (8 SP): GSR 1-41 FA



Fire Support Planning. Under this organization for combat, division level field artillery fire planning will be done in the division artillery TOC.

This planning will include:

- Preparing (and executing on order) the field artillery contribution to a counterpreparation.
- Identifying aiming points and tentatively assigning firing units to deliver effective massed fires against mass targets at potential chokepoints, assembly areas, and other necessary sites.
- Planning and managing the division counterfire program.
- Planning fires to suppress enemy air defense.
- Planning fires to isolate enemy forces in the penetration.
- Planning fires to cover obstacles in the division zone.

Fire Support Coordination. Once the division commander determines the time and place for the concentration, the division artillery commander and his staff prepare to execute their plan for main battle area support. Prior to execution of these plans, certain actions should be taken:

- Insure that covering force area artillery units understand their main battle area missions.
- Coordinate main battle area positions, routes, ammunition supply, and survey control for main battle area FA positions.
- Reorient main battle area target acquisition assets to insure proper coverage of the main thrust zone.
- Terminate 8-in/155-mm cross-attachment established for the covering force area fight.

Close Air Support. In the main battle area the majority of the close air support will be retained at division to—

- destroy massed formations,
- blunt the nose of any penetration,
- isolate the enemy's first echelon and prevent reinforcements from joining the fight,
- stop local breakouts, and
- attack command posts and electronic jammers.

Planning. The main battle area FSCOORD with the asst G3 (air) and ALO will develop a coordinated plan for the employment of CAS. Aircraft ordnance loads should be commensurate with anticipated targets but weighted in favor of antiarmor munitions; e.g., Maverick missiles, Rockeye cluster munitions, cannons loaded with a ratio of 3 to 1 AP and HEI, and 500- and 2,000-pound laser guided bombs (LGB). Mixed loads are desirable. Other stores should include fragmentation/incendiary cluster munitions for suppression of enemy air defenses. CAS must be integrated with FA suppression of enemy air defense fires to insure aircraft survivability and to allow aircraft to carry optimum loads for targets. Suppression fires will be planned in accordance with the suppression plan from corps.

Distribution. The ALO recommends to the FSCOORD how available CAS sorties should be distributed to lower echelons. Some sorties must be made immediately available to main battle area brigades, but division must retain enough to facilitate massing. Fire support coordination agencies with TACPs must insure that FIST chiefs are available and capable of controlling airstrikes when FACs are not available. Mission control details should be worked out in advance so that CAS can be employed as effectively and expeditiously as FA.

Status. The ALO must recommend ground or airborne alert status for sorties.

Considerations affecting alert status include:

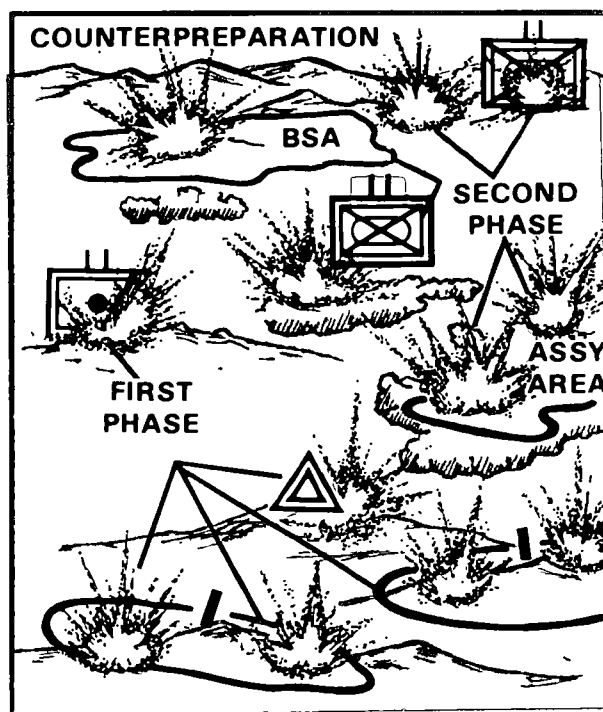
- the number and capability of identified enemy ADA units,
- overall effectiveness of the suppression of enemy air defense program,
- flying time to the battle area,
- weather/visibility (day or night), and
- aircraft type and ordnance-carrying capability.

Excessive loiter times waste valuable CAS resources and *should be used only when rapid reaction is essential*. If aircraft on airborne alert are unable to strike a primary target, secondary preplanned targets should be designated.

Coordination. The FSCoord and the ALO work together to allow fighter aircraft and FA to use the same general airspace. Using the two systems in closely coordinated operations will greatly increase the effectiveness of both. Some of the advantages are *suppression of enemy air defense fires so the flight can concentrate totally on the target, the massing of firepower to achieve a desired result, the blocking of an enemy advance or retreat, the use of artillery illumination support for target marking, and support of search and rescue operations for downed aircrews*. Existing airspace coordination plans for FA and CAS aircraft of a generalized nature should be used as a point of departure for implementation of specific missions. The ALO should suggest the desired axis of attack for fighters and is best qualified to determine timing, altitude, and lateral separation requirements.

The Counterpreparation. The counterpreparation is an *intense volume of prearranged fire delivered when the imminence of enemy attack is discovered*. The purpose of a counterpreparation is to disorganize command control, break up formations, decrease the effectiveness of fire and maneuver elements, and impair the enemy's offensive spirit. A counterpreparation normally is planned in advance, held on call, and fired when the maneuver commander determines the attack is imminent.

A counterpreparation normally is phased to permit successive attack on certain types of targets. The *first phase* attacks frontline positions, OPs, and fire support delivery and control elements. The *second phase* targets maneuver command posts, communications facilities, assembly areas, logistical complexes, and reserves.

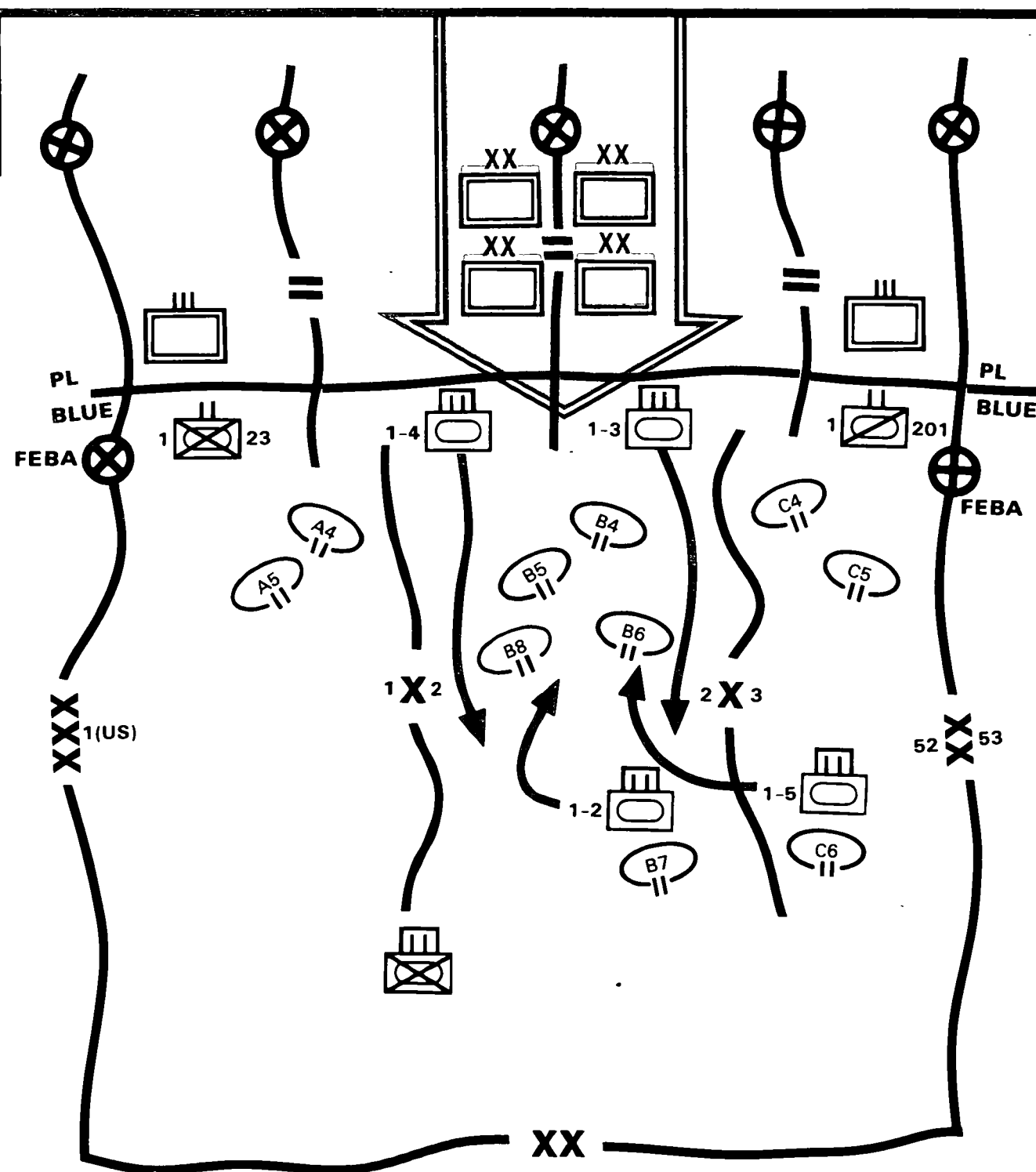


Field artillery counterpreparation fires are planned by the DS FA battalion or higher echelon. For a discussion of counterpreparation planning procedures, see appendix I.

□ How to Support the Main Battle Area Area of Concentration

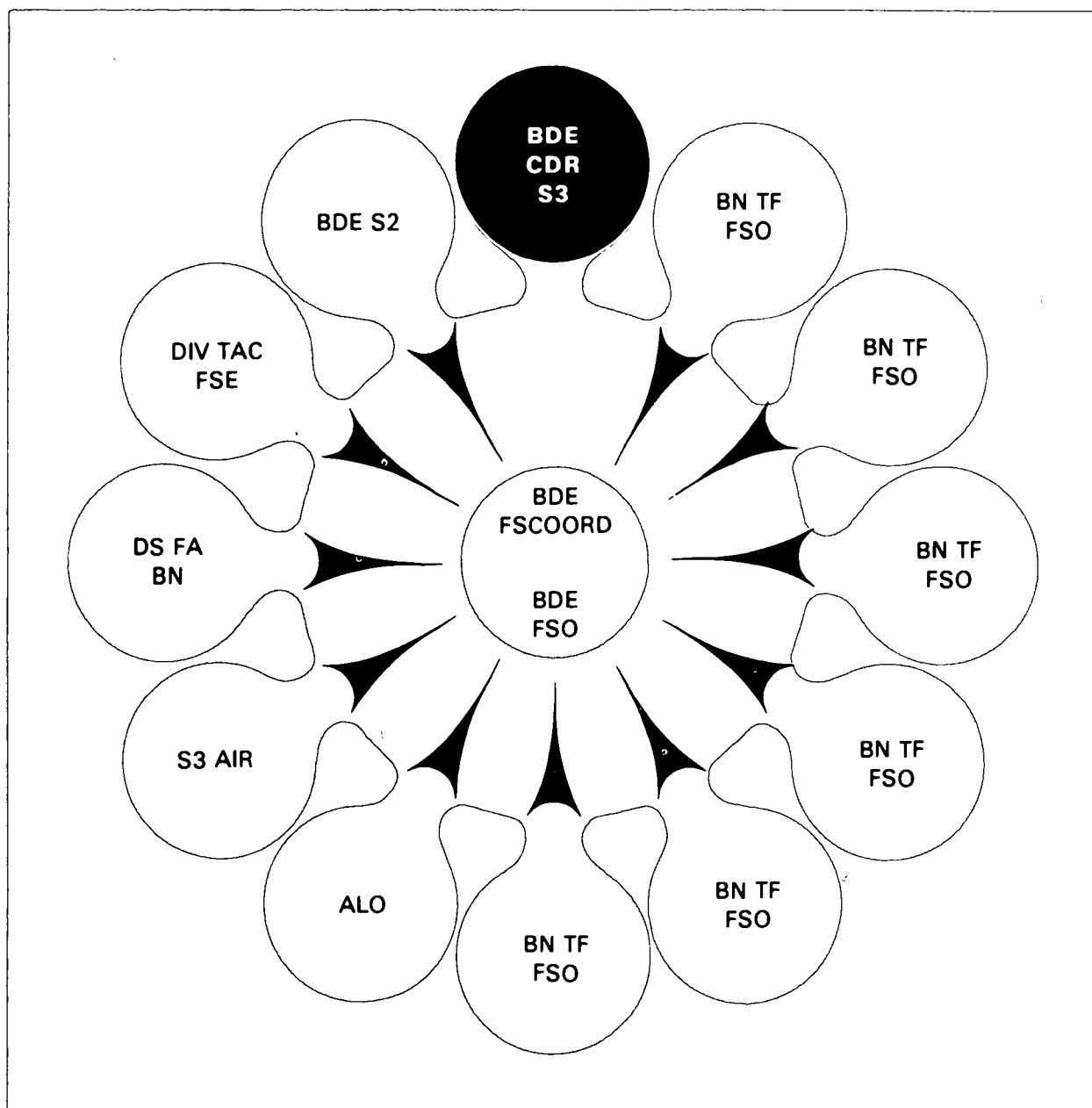
General Situation. The covering force has forced the enemy to deploy and begin massing for their breakthrough attempt. Intelligence confirms that an enemy attack of two combined arms armies has split the division sector. The main effort, within the division, is in the center against the 2d Brigade. The enemy's second echelon divisions are following about 15-30 kilometers behind the first echelon divisions. On the basis of this information, the commander begins to concentrate maneuver and fire support forces to meet the enemy breakthrough attempt.

Initially the commander attaches TF 1-2 Armor and TF 1-5 Armor to the 2d Brigade. Covering force maneuver elements nearing the forward edge of the main battle area are now under the control of the brigades in their respective sectors. The 2d Brigade is controlling TFs 1-3 Armor and 1-4 Armor to the front; the brigade commander will also use these task forces to reinforce forces in the critical sector.



FSCOORD Activities. The FSCOORD for the 2d Brigade is the commander of the DS FA battalion. He is assisted by the FSO at the brigade FSE. His contacts in the planning and coordination of fire support are shown in figure 5-12.

FIGURE 5-12. MAIN THRUST BRIGADE FSCOORD's FIRE SUPPORT CONTACTS.



The FSCoord of the brigade facing the main thrust has an extremely challenging job. He must coordinate the bulk of the division's fire support assets as they are used in support of the brigade that contains the bulk of the division's maneuver forces. At times, as many as five or six battalions may be in contact simultaneously.

The brigade FSCoord must insure that—

- each engaged battalion TF has access to immediately responsive fire support,
- fires are rapidly massed on appropriate targets within the battle area,
- support of repositioning and reinforcing TFs takes place with minimum confusion,
- the change of fire support control (at Phase Line BLUE) and support of the passage into the main battle area go smoothly in the brigade's sector,
- FA positions and movement are coordinated and timed so that they do not interfere with maneuver plans,
- appropriate fire support coordinating measures are put into effect to allow rapid attack of enemy forces not in immediate contact with brigade units, and
- responsive communications and procedures are in effect for all available fire support means.

Fire Support Assets. The following fire support assets are available to the brigade:

- **Mortars.** Those organic to the task forces of the brigade.

- **CAS.** Priority on the 50 sorties allocated to division daily.

- **FA:**
 - 1-41 FA: DS 2 Bde
 - 1-301 FA: R 1-41 FA
 - 1-302 FA: GSR 1-41 FA
 - 1-303 FA: GSR 1-41 FA

When control of the covering force elements was handed off to main battle area units, the 201st FA Brigade and its FA elements were released from their covering force missions.

The brigade FSO normally will not plan or control mortar fires; however, he must be aware of who has what mortar support when he is recommending priorities for other fire support means.

Commander's Fire Support Guidance. The brigade commander provides the following guidance to the brigade FSCoord:

"The main attack is coming in the 2d Brigade's sector. It looks now as if we'll be getting the maneuver battalions and fire support the division commander originally allocated for this contingency. You've got to insure that each reinforcing maneuver battalion gets rapidly linked up with your fire support system and that each maneuver battalion gets responsive fire support when it's engaged. We could well have four or five maneuver battalions engaged at one time so insure that we don't have any big communications bottlenecks. We should be getting almost all of division's CAS sorties—so be looking for the right targets—and be sure that our FACs are in the best places. We've got to get everything we can out of our fire support on this one."

Fire Support Tasks. At brigade level, there are these major fire support tasks:

- Use massed fires on large enemy concentrations—here that could include six FA battalions, CAS, and mortars.
- Canalize, slow, and erode enemy forces before they come within direct-fire range of friendly units.
- Fire to support disengaging and repositioning of battalion TFs.
- Furnish suppression of enemy air defense fires to support brigade use of CAS and AH.
- Provide immediate counterfire and a link to the division artillery counterfire system.

Positioning. The positioning of FA units in the main thrust sector is one of the most critical fire support functions of the battle. The overriding consideration must be that firing units be able to range the area of concentration but that they not be forced to displace at times when their fires are most needed.

Division artillery will position all FA units except the DS and one reinforcing battalion. GSR elements will be positioned to fire in support of the 2d Brigade.

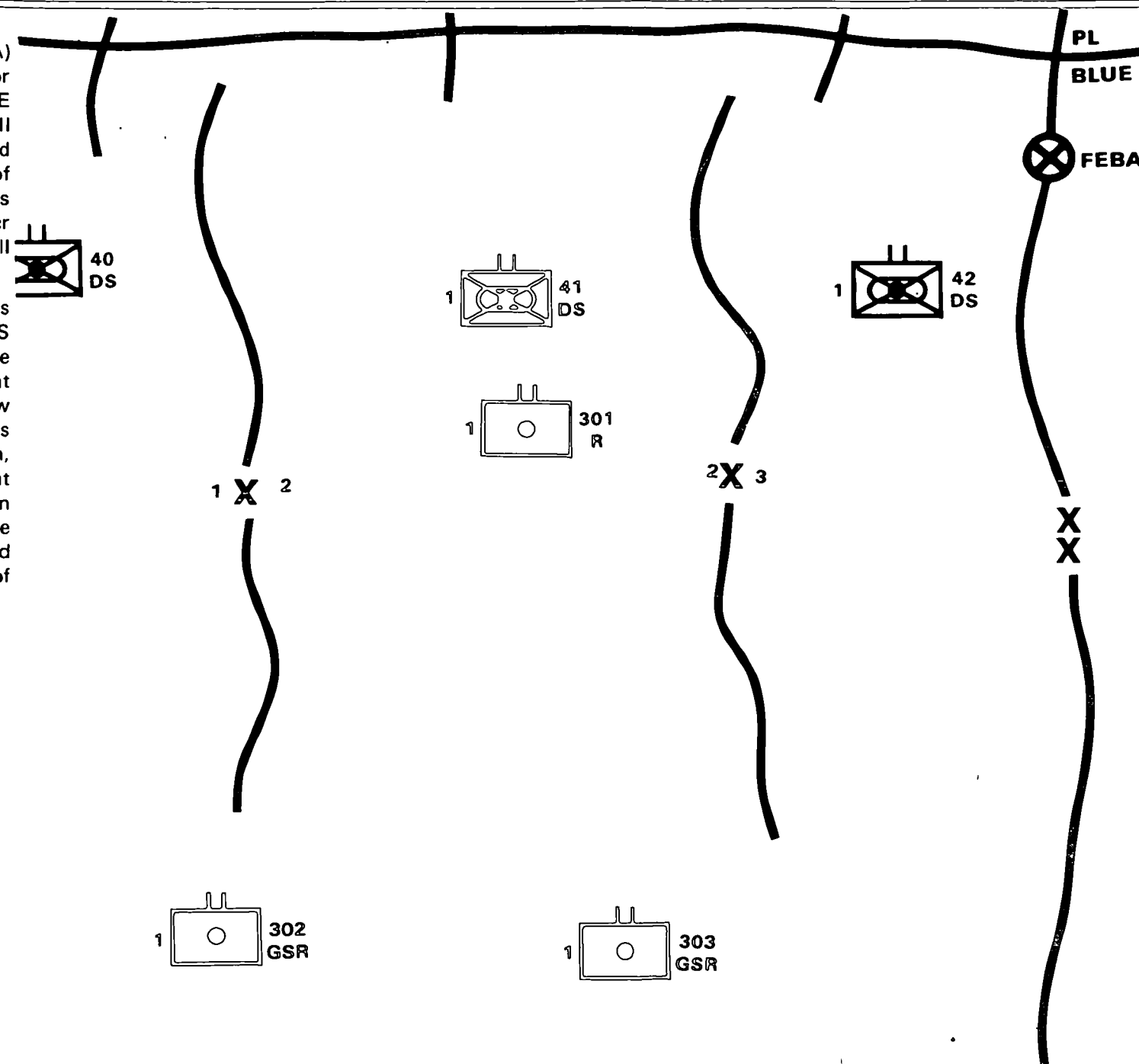
1-41 FA (2d Bde's DS FA bn) commander will position his batteries and those of his reinforcing battalion.

During the covering force fight, both units would have been positioned well forward near the center of the 2d Brigade sector. After the enemy's intentions are confirmed by the covering forces and during concentration within the main battle area, the DS battalion commander will probably want to put his firing units farther back and toward the flanks. While the firing units are on the flanks, the two FA battalion CPs will have to position themselves to insure adequate communications and adequate control by the DS battalion commander.

FIGURE 5-13. POSITIONING DIRECT SUPPORT AND REINFORCING FIELD ARTILLERY.

The 2d Brigade's DS battalion (1-41 FA) will have done all of the initial fire planning for the 2d Brigade fight from Phase Line BLUE throughout the brigade's sector. 1-41 FA will continue to plan and control FA fires in the 2d Brigade's area of responsibility. The addition of the reinforcing FA battalion, however, doubles the firing units immediately available to deliver fires for 2d Brigade. The GSR elements will provide second priority fires to 2d Brigade.

As the fight nears the FEBA and more targets appear, the normal relationship between the DS and reinforcing battalions may be altered. The demand for close support fires may be so great that *quick-fire channels* must be used to allow engaged units to call for fire directly to batteries of the reinforcing battalion. The DS battalion, however, must monitor these requests so that all available field artillery may be massed on appropriate targets throughout the brigade sector. Available GSR fires can be acquired through liaison representatives in the FDC of the DS battalion.



Fire Support Coordination. A tremendous amount of FA coordination will be required to properly support the main battle area brigade in the path of the enemy main thrust. Much of this coordination, however, can be done well in advance. FM 6-20-1 describes this preparation in detail.

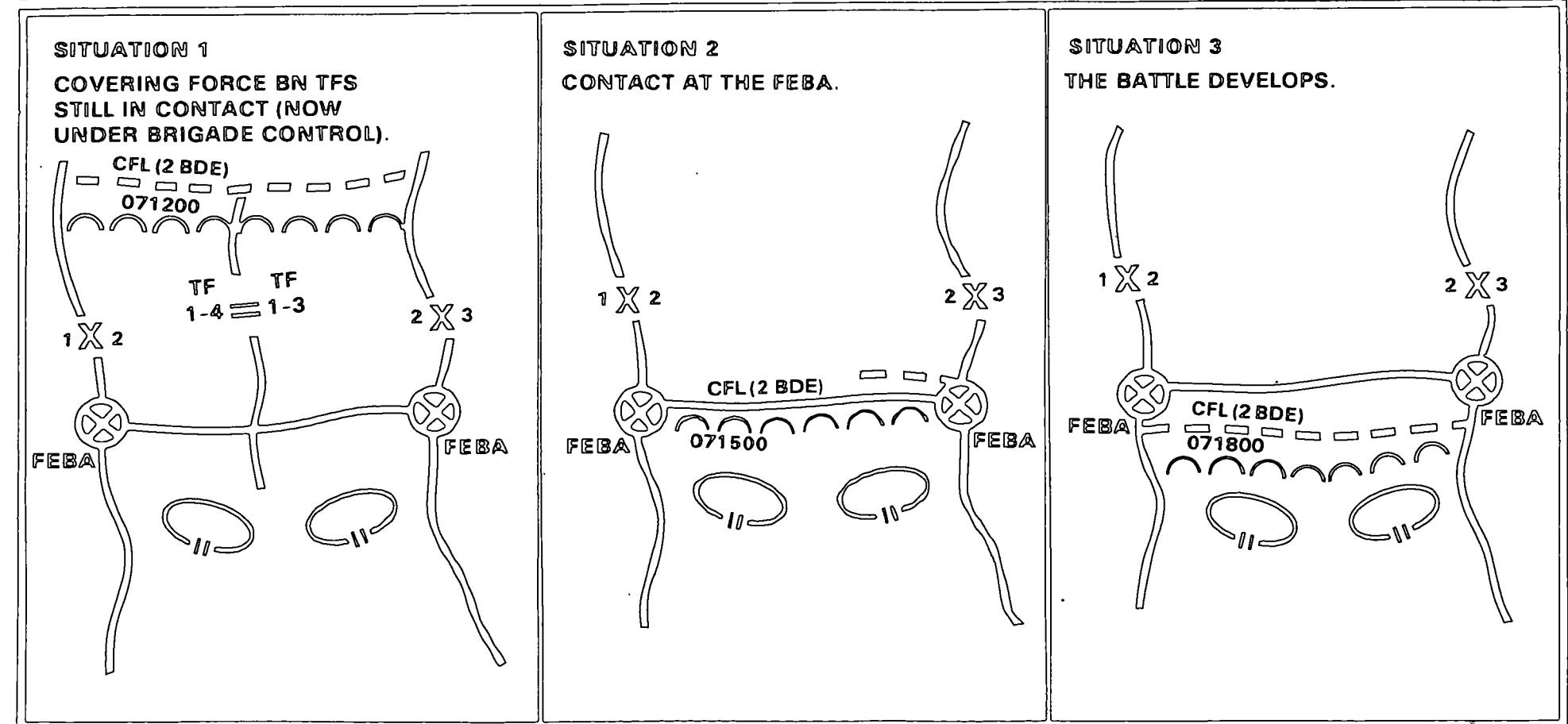
Most of the details between the DS battalion and its reinforcing unit, for example, must be worked out as a probable contingency before the covering force deploys.

Primary and alternate positions and movement routes will also be planned and coordinated well in advance.

Fire Support Coordination Measures. After the enemy reaches the FEBA, attention will focus on the developing breakthrough. The 2d Brigade will be concerned primarily with attacking enemy forces to their immediate front while division will attempt to prevent more enemy forces from moving toward the breakthrough zone. *At no time or place on the battlefield is the proper use of fire support coordinating measures more important.*

The brigade coordinated fire line should be kept as close as possible to the frontline units so that FA under division control can attack targets beyond the coordinated fire line without coordinating with 2d Brigade. The brigade FSCOORD should recommend coordinated fire line changes as the battle develops. The division FSCOORD recommends that the corps FSCL be moved rearward in the same manner so that CAS available at division or corps can be used without unnecessary coordination. The coordinated fire line during the phases of the 2d Brigade battle well could be as shown in figure 5-14.

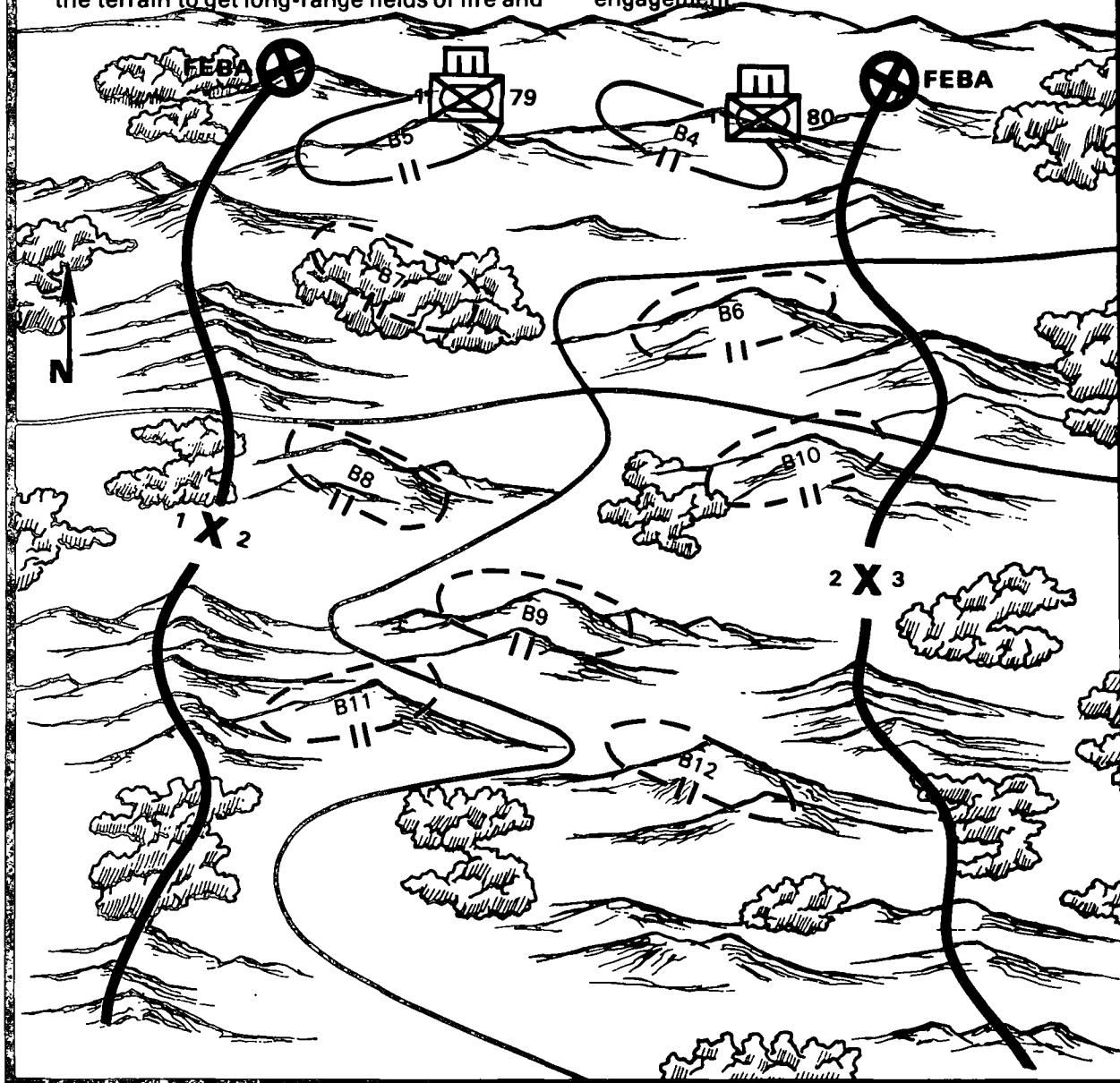
FIGURE 5-14. MAIN BATTLE AREA COORDINATING MEASURE.



□ **How to Support a
Battalion Task Force in
the Main Battle Area**

TF 1-80 Mech and TF 1-79 Mech are in Battle Positions B4 and B5 respectively, preparing to defend in the 2d Brigade sector as shown. TF 1-80 on the right receives the mission to "defend in sector." The brigade commander defends as far forward as possible. His plan capitalizes on every fold in the terrain to get long-range fields of fire and

to permit surprise flanking direct fire whenever possible. The TF 1-80 commander and FSO were especially alert to areas where they could apply massed fires to slow or stop the enemy. These massed fires will be essential to provide adequate target-servicing time for direct-fire weapons in each engagement.



For this mission, the task force commander planned with the following major assets available:

TF 1-80 Mech

- 2 Mech infantry companies
- 1 Tank company
(attached from tank battalion)
- 1 Combat support company

The TF commander organized his company team as follows:

ORGANIZATION FOR COMBAT

Company Teams A, B, and Tank

- 2 Mech inf platoons
- 1 Tank platoon
- 1 AT section
- (Company Team Tank's AT section comes from CSC)

FIRE SUPPORT ASSETS

Mortars

- 2 Mech co sections
- 1 Bn mort platoon

FA

- 1 FA bn (DS to 2 Bde)
- 1 FA bn (R DS bn)
- Additional fires from GSR bns

CAS

- From brigade sorties

Engineers

- 1 DS platoon

As the commander analyzes the mission and visualizes the battle, the FSO continually:

- assesses the capabilities of the unit's indirect-fire support means,
- advises the commander on the indirect-fire supportability of a particular course of action, and
- assists the commander in arriving at the course of action that best uses the capabilities of both maneuver and fire support assets.

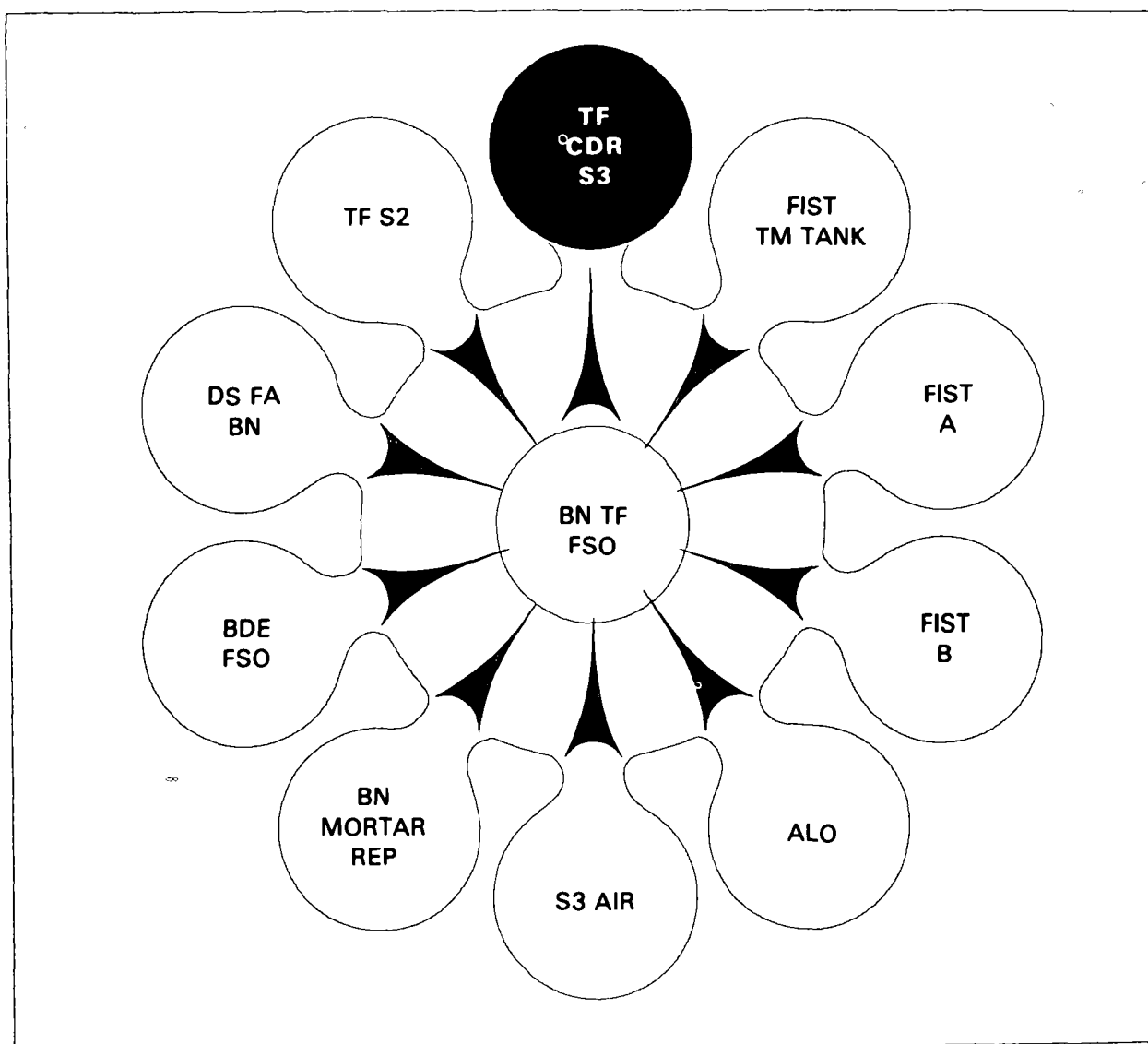
On the basis of his mission analysis and visualization of the battle with the S3 and FSO, the task force commander tailored his company teams to the terrain and identified company team battle positions. Since the brigade commander had designated unassigned terrain within the brigade sector to be "engagement areas" (or kill zones or firetraps), the TF commander decided that some form of fire distribution technique was required. He therefore identified all engagement areas forward and to the flanks of Battle Position B4, subdivided them along easily identifiable terrain, and assigned these as primary and secondary areas of responsibility to his company team commanders. *Enemy observed within a primary area would be engaged as first priority.*

Because it was the hub of a major highway network and therefore considered critical, the brigade commander decided to have TF 1-80 establish a strongpoint in the urban area in the rear of his sector. Company Team A and the engineer platoon will prepare and occupy the strongpoint.

The TF commander determined critical task force targets and disseminated them to subordinate elements and fire support units. In addition, he developed plans to assist the rearward passage of covering force elements in his sector. He prepared to receive attachment of some of these elements if necessary.

FSCOORD Activities. As the full-time FSCOORD for the task force, the battalion FSO assisted the commander in determining critical fire support tasks and how they complement the maneuver plan. He recommended the best way to accomplish these tasks and provided guidance and assistance to FIST chiefs to help them fit their fire support planning into the overall task force battle plan. The FSO's contacts are shown in figure 5-15.

FIGURE 5-15. TASK FORCE FSO CONTACTS IN THE MAIN BATTLE AREA.



Since he has been in the TF battle position for a time before the fight actually arrives there, the FSO has had the opportunity to do several tasks:

- **Locate targets precisely and get survey information from the DS FA battalion about the whole task force sector.**
- **Conduct a detailed target area reconnaissance.**
- **Select specific fire support means to shoot specific targets.**
- **Refine in detail targets received from company teams.**
- **Target the sector in depth.**
- **Register weapons.**
- **Shoot in the most critical targets.**

Fire Support Planning for a Main Battle Area Battalion Task Force. Within a brigade facing the enemy's main effort, battalions normally are assigned battle positions. *In the main battle area, complete integration and close coordination of direct and indirect fires are even more critical because more enemies must be destroyed*

faster to win the decisive battle here. To insure that fires are continuously placed on advancing enemy forces, the FSO must carefully plan and coordinate control of fires as the covering force elements approach and pass through his main battle area battalion.

In his initial planning, the FSO examined tasks and assigned targets for fire support means available to accomplish them.

The battalion mortar fires were planned to provide close support of engaged companies. Their fires were targeted to suppress enemy overwatch positions, separate enemy infantry from tanks, and provide protective fires to battle positions. The heavy mortar platoon was placed in GS of the battalion with priority of fires to the scout platoon initially (which is forward of task force Battle Position B4). 81-mm fires from Company Teams A and B mortars are planned and controlled by their respective team FIST chiefs. All mortars are positioned in hardened, defilade positions. Alternate positions have been reconnoitered and prepared. Mortars move by echelon as the battle develops.

The DS FA battalion fires were planned primarily to permit rapid massing on enemy

Specific fire support planning tasks to be accomplished include:

- | | |
|---|---|
| <ul style="list-style-type: none"> ■ Mass fires to slow the enemy advance and canalize his forces. ■ Fires against known or suspect enemy elements capable of interfering with the rearward passage of covering force elements. HE and obscuring smoke fires are effective. ■ Fires to obscure or suppress suspect enemy overwatch positions. ■ Fires behind enemy first echelon forces to isolate them and facilitate direct-fire destruction. | <ul style="list-style-type: none"> ■ Fires to cover obstacles. ■ Fires to separate infantry from armor. ■ Smoke and suppressive HE fires to cover disengaging and repositioning of maneuver units. ■ Illuminating fires to facilitate direct fire at night. ■ Fires to support strongpoints (including final protective fires). |
|---|---|

formations to slow and canalize them and suppress their direct fires and those of overwatching elements. Deeper targets are planned to isolate lead echelons during direct-fire engagements as well as cover the rearward passage of covering force elements.

Massed fire targets especially critical to the battle plan were planned by the TF FSO, and then locations and target numbers were disseminated. FIST chiefs further targeted their areas, adding only those targets critical to the company team plan, and passed these to the FSO. The FSO consolidated and passed them to the DS FA battalion FDC and the brigade FSO. Priority of FA fires was also given to the scout platoon to assist the passage of covering force elements. Thereafter, priority will shift depending upon the flow of the battle. *To insure that they are clear and available for fire missions, FA fire net frequencies should not be used for fire planning.* Fire planning information should be sent encoded on the command fire net, wire, or carried by messenger. The TF FSO also sent the basic maneuver plan to the DS FA battalion so the FA would know when TF 1-80 elements such as the scout platoon and AT section not located within the TF battle position were sited.

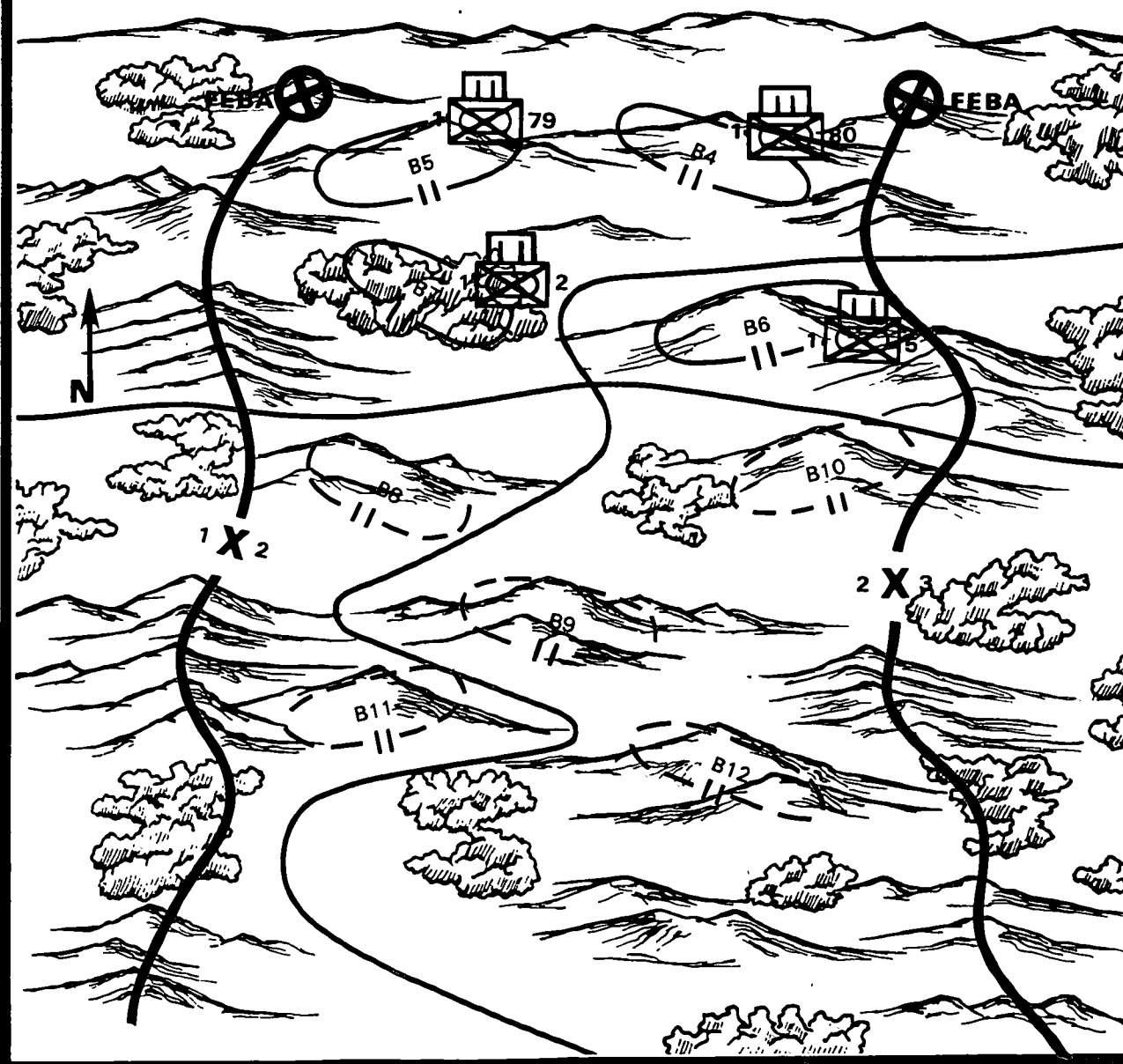
Close air support sorties available for planning were retained at brigade headquarters. However, the FSO, S3 air, and ALO determined where the most likely chokepoints existed to capitalize on the use of CAS and noted these for future reference. Procedures for requesting and controlling CAS were discussed and instructions were furnished to FIST chiefs. Mortars and FA were notified to mark identified CAS targets with smoke when requested.

Fire Support Coordination. While the brigade will be establishing the coordinated fire line, the TF FSO will recommend where it should be with respect to TF 1-80. Additional coordination by the FSO includes checking with the adjacent task force FSOs to obtain the best fire support along the edges of the task force sector.

Since the enemy's main thrust is now known to be coming in the 2d Brigade sector, the FEBA task force FSOs have some new considerations. There is a modified battle plan to coordinate. Recall that TF 1-79 is on the left and TF 1-80 is on the right of the brigade sector. The 2d Brigade commander has received attachment of TF 1-2 Armor and TF 1-5 Armor. He directs TF 1-2 to occupy

Battle Position B7 and TF 1-5 to occupy Battle Position B6. He notifies TF 1-79 and TF 1-80 of this action.

Because the main enemy thrust is coming in the 2d Brigade sector, additional fire support assets will be available to elements of the brigade.



The Task Force 1-80 commander, S3, and FSO have gathered to analyze the situation:

TF cdr: "We're going to have to get the most out of every engagement. Massed fires are a must to slow and disrupt the enemy's advance. How many battalions can we mass, based on the new FA organization?"

FSO: "Sir, we can mass up to four battalions now and with two others that will be in position by the time the enemy gets to the FEBA. We should request general release for scatterable mines, then we can use them responsively when necessary. We'll plan some more massed fires closer to battle positions to provide stronger resistance and later departure from one position to another."

TF cdr: "Good. Be sure we coordinate very closely with TF 1-79 and 3d Brigade to insure our plan and theirs complement each other. We must not allow any major elements to get between us and adjacent forces. We'll eventually pass back around TF 1-5 in Battle Position B6 and occupy Battle Position B9. S3, make sure TF 1-5 knows what routes we will use and how we expect to disengage from Battle Position B4. FSO, get with the TF 1-5 FSO to coordinate fires for our movement around them to Battle Position B9."

Fire Support Coordination for a Relocating Task Force. As TF 1-5 Armor from the division reserve moves to Battle Position B6, the commander, S3, and FSO have several critical tasks to accomplish. The tasks are:

- Analyze the mission to determine—
 - tentative battle positions for company teams,
 - anticipated flow of the battle from initial to subsequent positions, and
 - fire support tasks and resources available.
- Establish communications and coordination with the gaining headquarters and appropriate subordinate or supporting elements.
- Develop tentative maneuver and fire support plans and disseminate these en route to the new area.

Of particular concern to the FSO are the *critical targets that form the basis for fire support in the overall battle plan*. The commander and FSO develop these initially through map inspection, available intelligence, and any guidance available at the time from the gaining brigade commander. These plans will be adjusted and refined when the commander arrives in his new sector.

The FSO checks with the DS FA battalion to get the block of target numbers assigned to the task force. The DS battalion will also provide any targets that have already been planned for the task force's new sector. In addition, the FSO confirms the frequencies and call signs in use in the new area and provides these to elements within the task force.

When the task force commander and FSO arrive in the new brigade area, they will talk

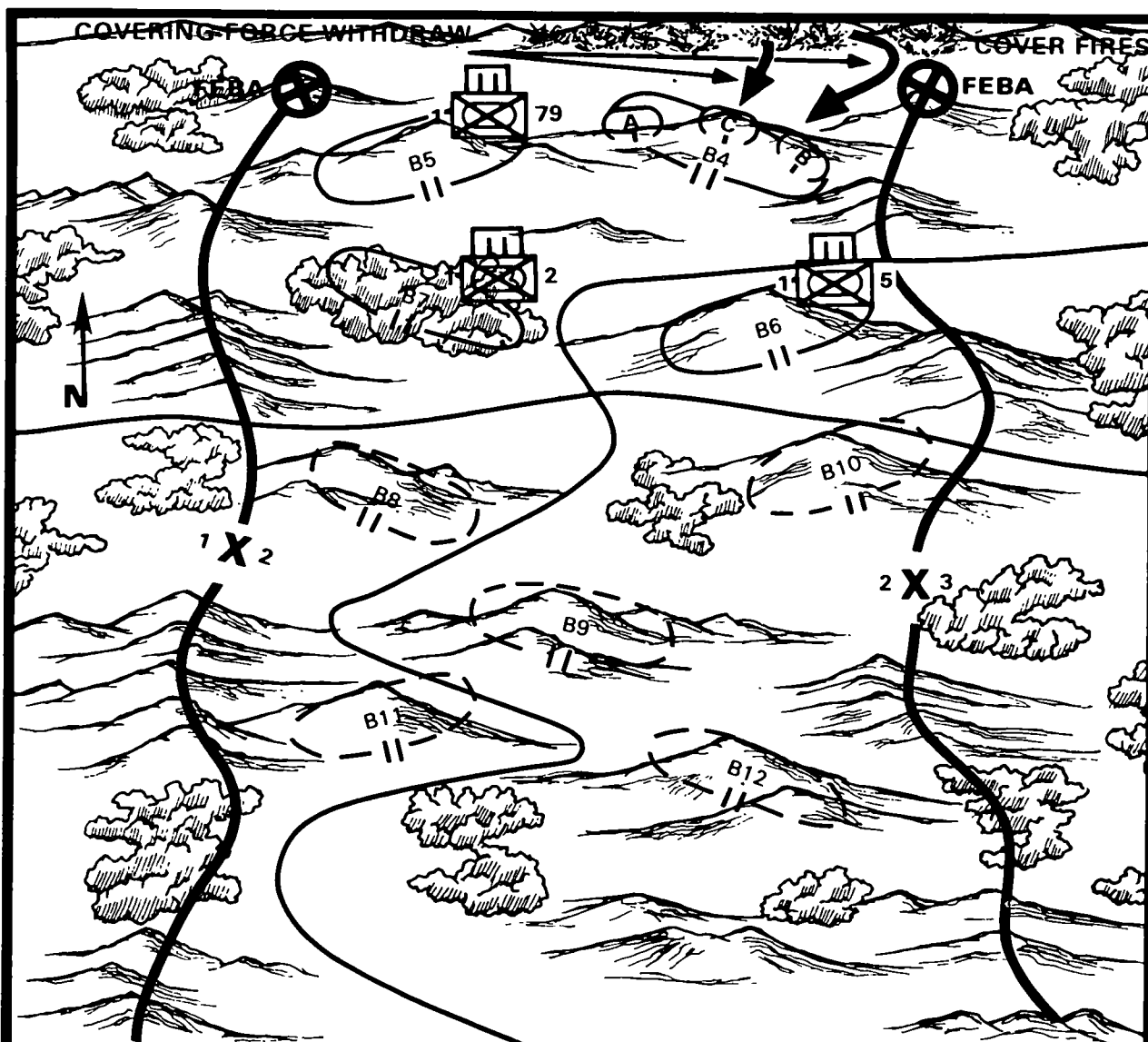
with the brigade commander and brigade FSO to accomplish the following:

- Receive guidance and get the brigade commander's concept of their new mission and the overall brigade operation.
- Complete the linkup of task force, brigade, and DS battalion fire support agencies (call signs, frequencies, and SOP items).
- Adjust, as required, their preliminary plans made en route to the new sector.

When the TF 1-5 arrives in Battle Position B6, the commander refines his initial plan and coordinates with TF 1-80. In the fire support area, the two TF FSOs have five major concerns. They must—

- confirm targets already planned by TF 1-80;
- coordinate fire support as TF 1-80 passes around TF 1-5;
- determine the sequence of fires to support the movement of TF 1-80;
- use CAS aircraft against clearly identifiable enemy targets without coordination; and
- be prepared to move our counter-attack on order from the brigade commander.

CONTINUING WITH
THE EXAMPLE



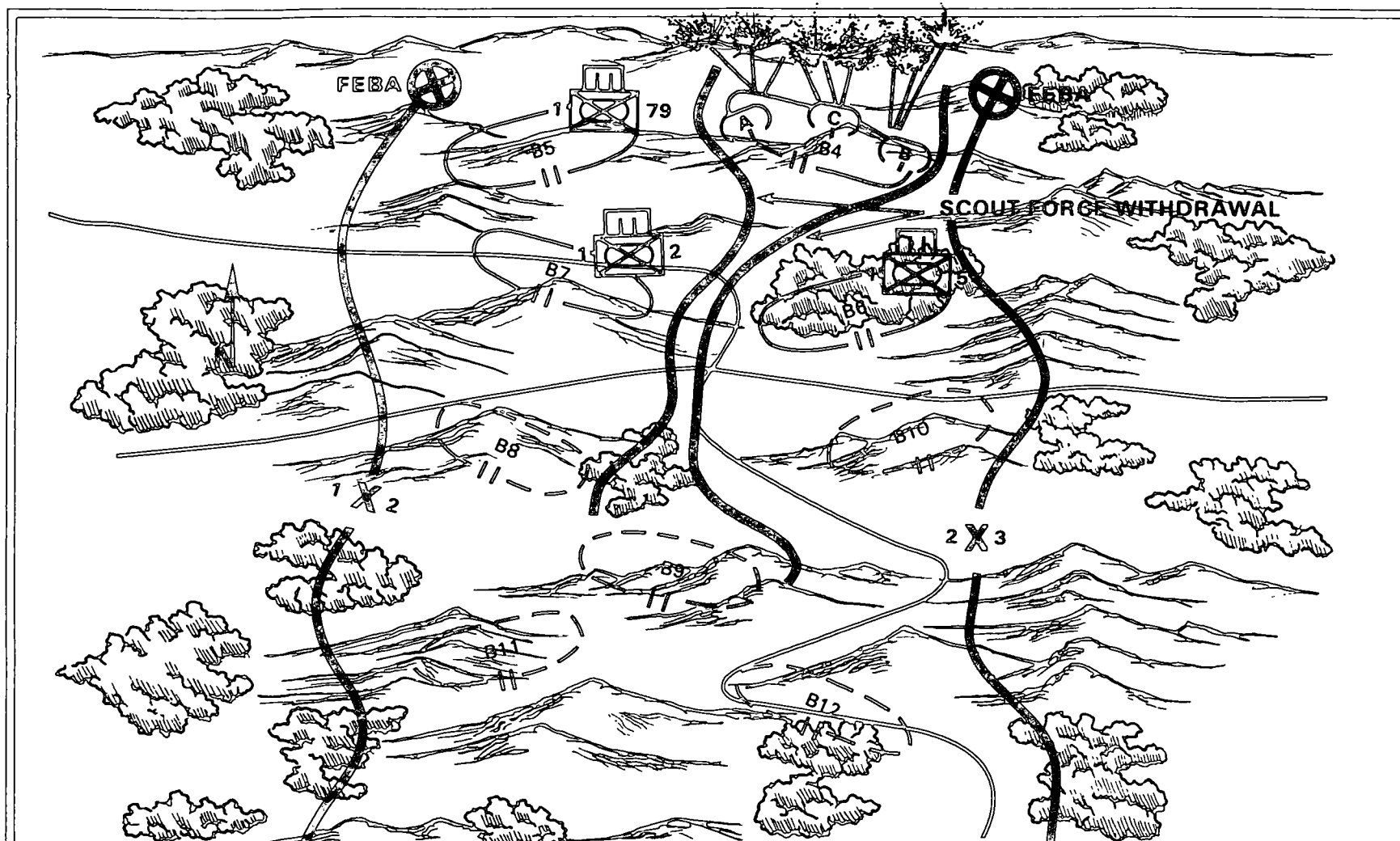
As the battle nears the FEBA, the covering force task forces are about to pass through the FEBA forces who are deployed as shown above.

In the main battle area, complete integration and coordination of direct and indirect fires is critical.

TF 1-80 has placed scouts reinforced with TOWs forward of these FEBA positions to assist the passage of covering force elements. Scouts have contacted main

elements of the covering force and are preparing to call for fire that was coordinated by the covering force elements.

As the covering force elements disengage using fire and maneuver, forward covering force teams integrate massed fires on approaching enemy columns. They increase the volume of direct and indirect fires to cover their withdrawal. Scouts are aware of these and other planned targets in the area and continue the application of indirect fire as the last covering force elements pass the scouts' position.



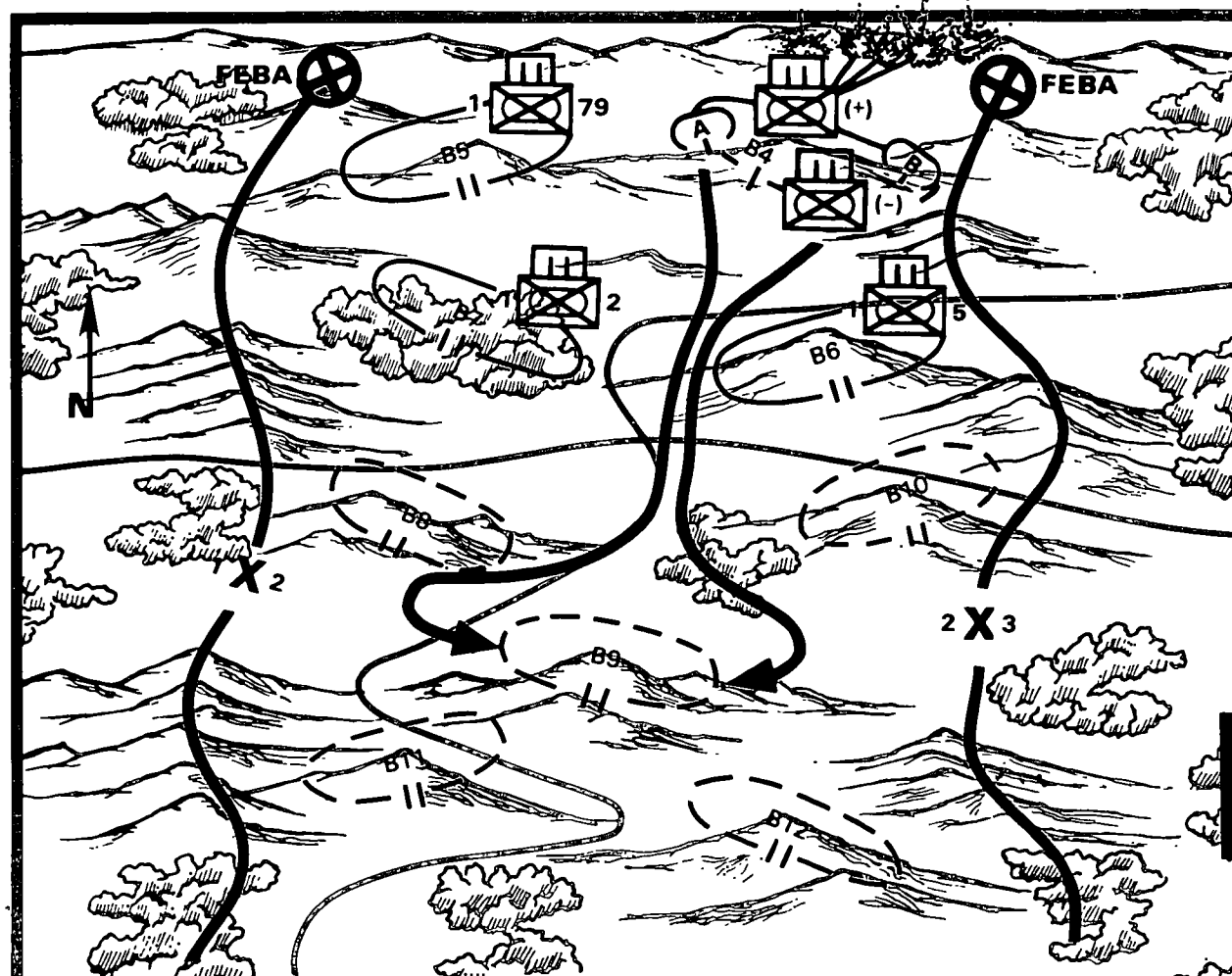
As the enemy approaches, the scouts withdraw through the FEBA forces under the overwatching fires of TF 1-80. The TF 1-80 FSO (with Company Team Tank) insures that all targets are covered and he controls some fires from the TF FSE, if necessary, to protect the scouts' withdrawal. Scouts provide specific information on the location of advancing enemy elements. The FSO carefully monitors this situation to determine what modifications, if any, are required in fire support priorities or timing for the initial engagement in the main battle area.

When the enemy appears on and around the small ridge to the front, the teams call for long-range indirect fires to slow him, further button up armored vehicles, and interrupt the momentum of his attack. These fires assume critical importance because the company teams need maximum time to service as many targets as possible within their assigned engagement

areas. Fire support covers obstacles to keep the enemy from breaching them and prevents effective enemy overwatch.

The company teams initiate direct fires against slowed enemy tanks and BMPs within the assigned engagement areas against a backdrop of massed fire support that destroys or suppresses trailing enemy elements. Company Team B, on the right, calls in long-range indirect fires against enemy elements that are moving southeast of the task force battle position.

As the battle progresses, the task force receives enemy artillery and mortar fires of increasing intensity. This seriously impairs the task force's direct-fire capabilities. The FSO requests immediate counterfire through the DS FA battalion to the division artillery TOC which responds immediately with a counterfire mission oriented on the direction provided by the task force FSO and the FIST chief.



During the battle, Company Team B has been engaging enemy elements approaching to the right of the task force.

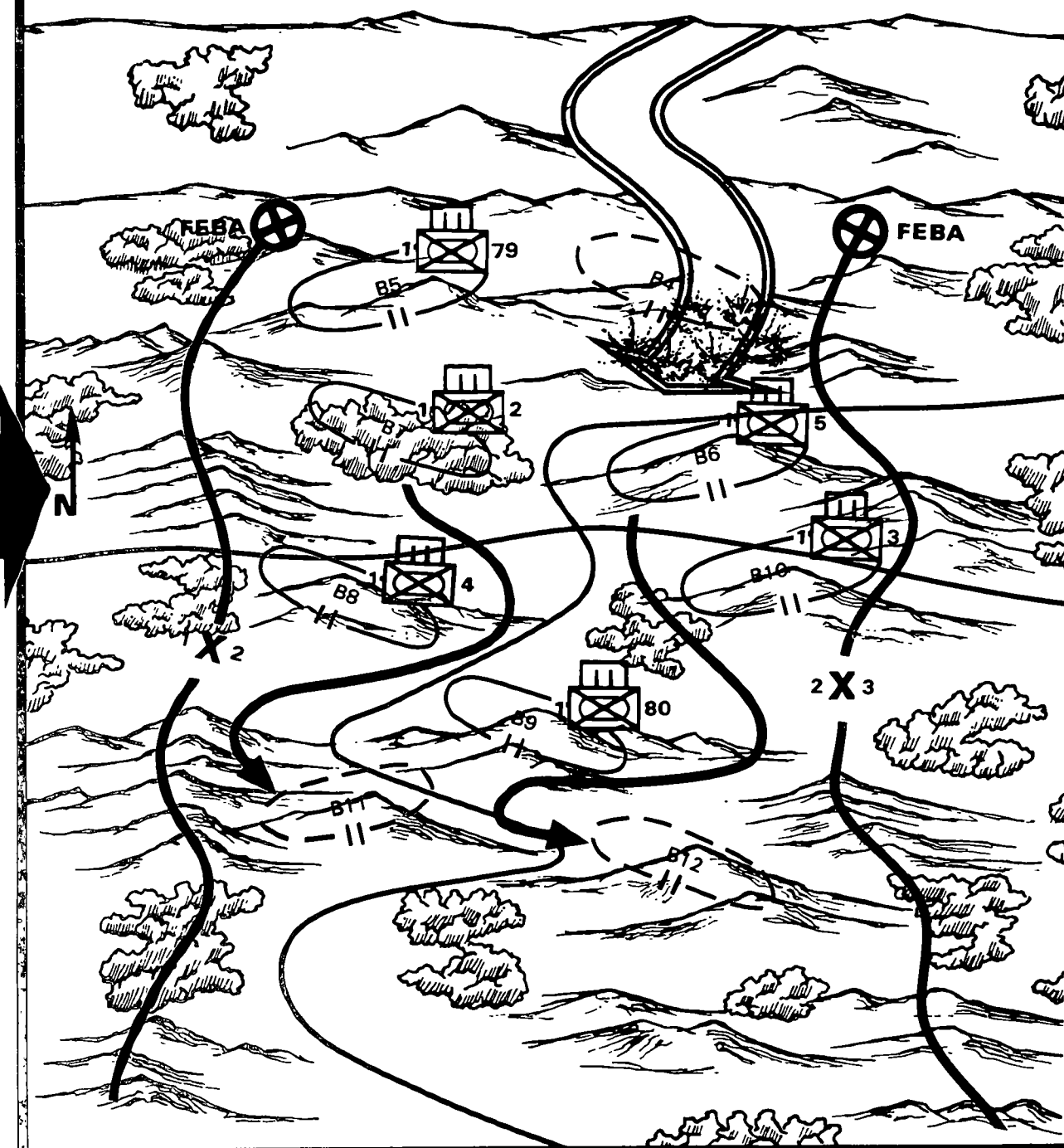
The task force has inflicted heavy damage on the enemy but is no longer able to remain in position. The task force commander, therefore, prepares to disengage and move, with permission from the brigade commander, to his next position—Battle Position B9. To do this, the commander will hold Company Team Tank in the center to maintain pressure on the enemy and provide overwatch. He also detaches Company Team B's (on the right) tank platoon and places it with Company Team Tank. He directs the FSO to be prepared to fire a smokescreen southeast of the battle position to cover

movement of the company teams (terrain on the southwest sufficiently masks the movement from the enemy). The TF FSO calls for a mixture of smoke and HE fires to assist Company Team A repositioning. He prepares to do the same for Company Team B as they disengage and move to their next battle position.

When TF 1-80 can no longer hold its positions, it passes around and is overwatched by TF 1-5 in Battle Position B6 and moves to prepared Battle Position B9. Detailed coordination between the TF 1-80 and 1-5 FSOs provides for continuous control and coordination of fires as the passage takes place.

TF 1-4 from 1st Bde and TF 1-3 from 3rd Bde take up prepared positions B8 and B10 respectively. TF 1-2 and TF 1-5 in positions B7 and B6 have come under intensive enemy artillery and mortar fires. With permission of

the Brigade Commander, TF 1-2 and TF 1-5 move to prepared positions B11 and B12 respectively. TF 1-2 is overwatched by TF 1-4. TF 1-5 is overwatched by TF 1-3.



Having been confronted with intense direct and indirect fires throughout the brigade sector, the enemy incurred high losses and his attack was slowed. He is presently being engaged by TF 1-4 Armor from Battle Position B8 and TF 1-80 Mech from Battle Position B9.

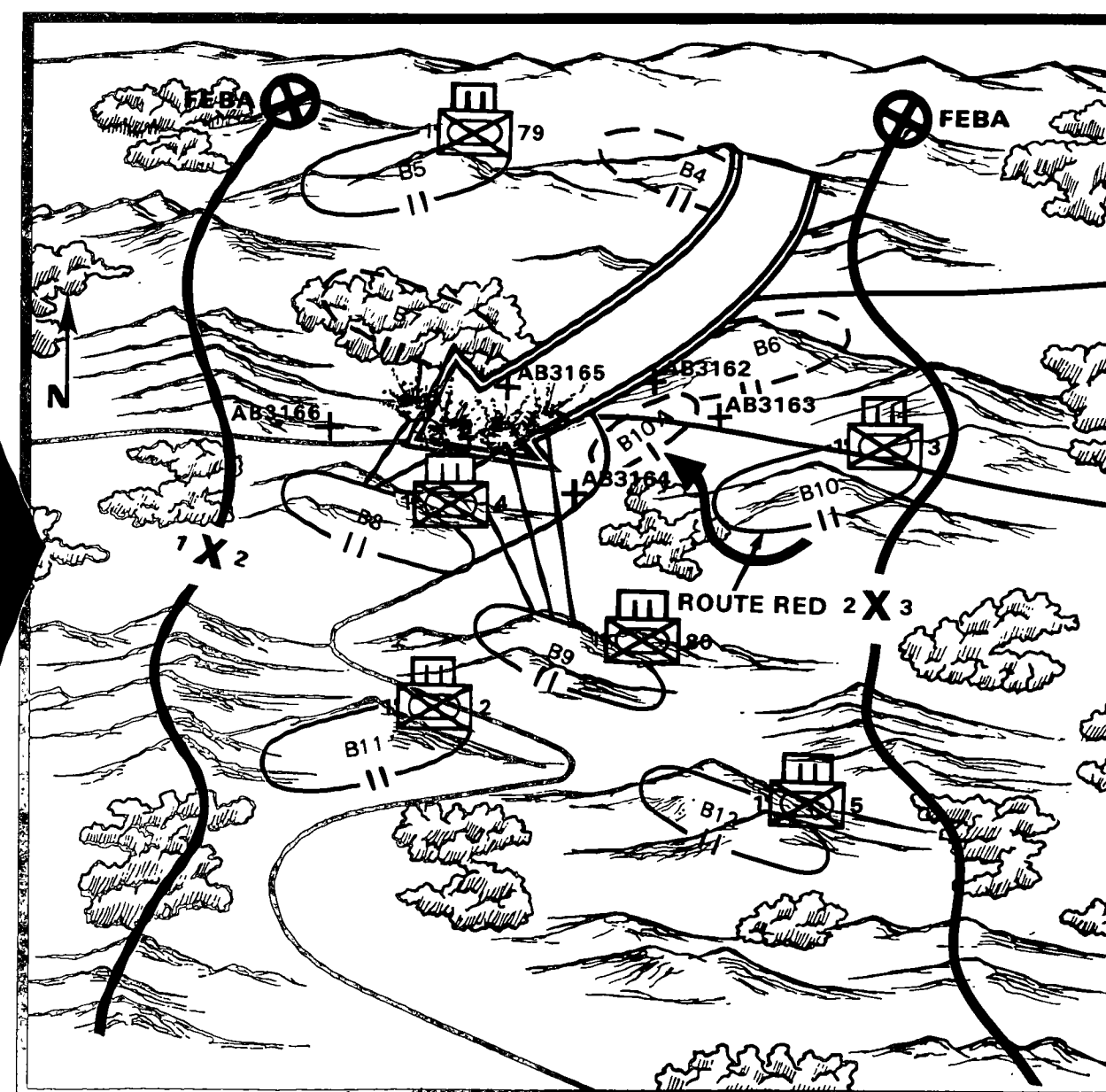
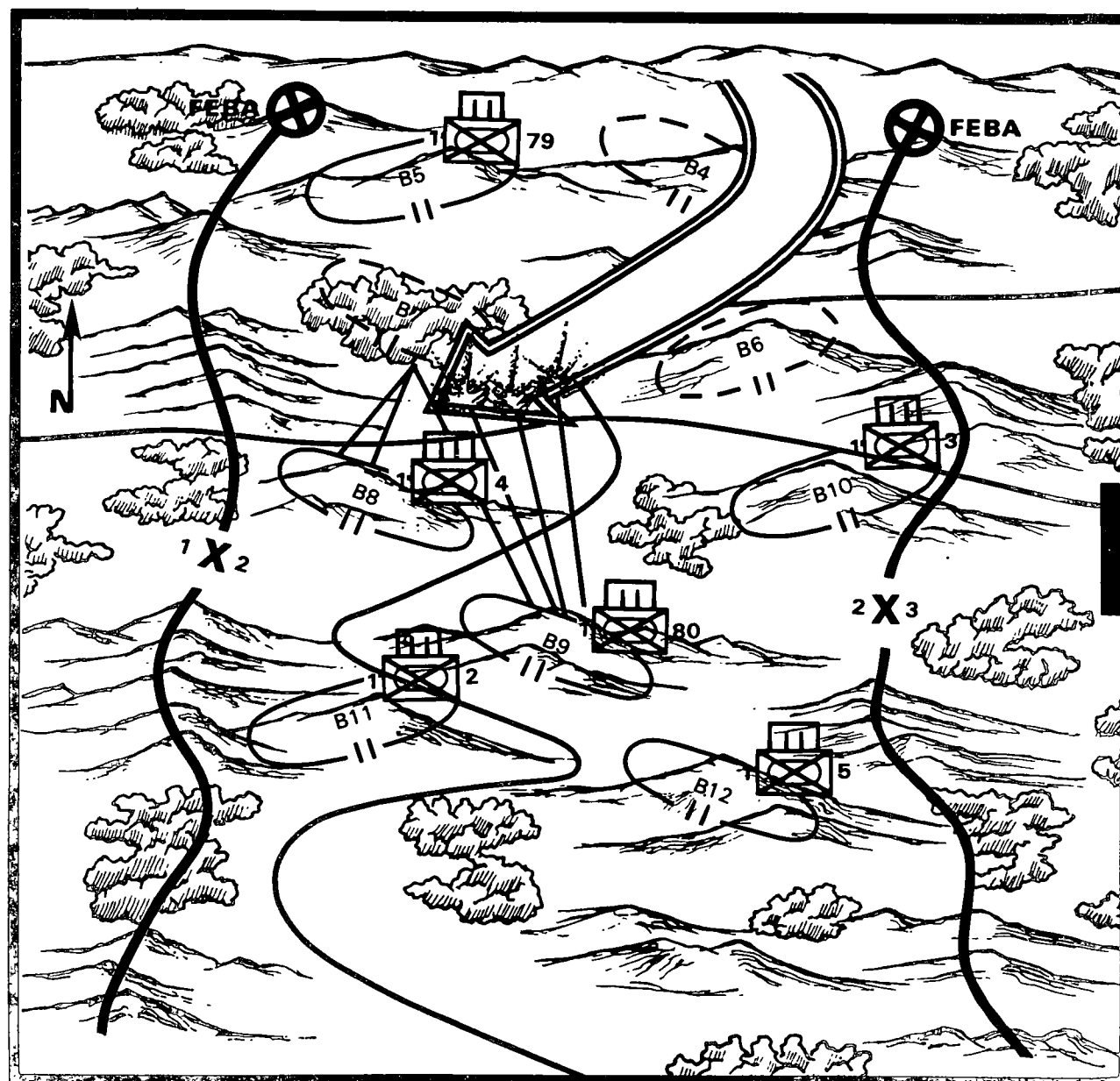
The brigade commander, seeing an opportunity to defeat the enemy in detail,

now directs TF 1-3 Armor, in Battle Position B10, to conduct a tank-heavy company team counterattack from the east.

The TF 1-3 commander quickly formulates his plan and issues his fragmentary order. He decides to move Company Team B, composed of the two tank platoons and one mech platoon, along route RED to attack into the

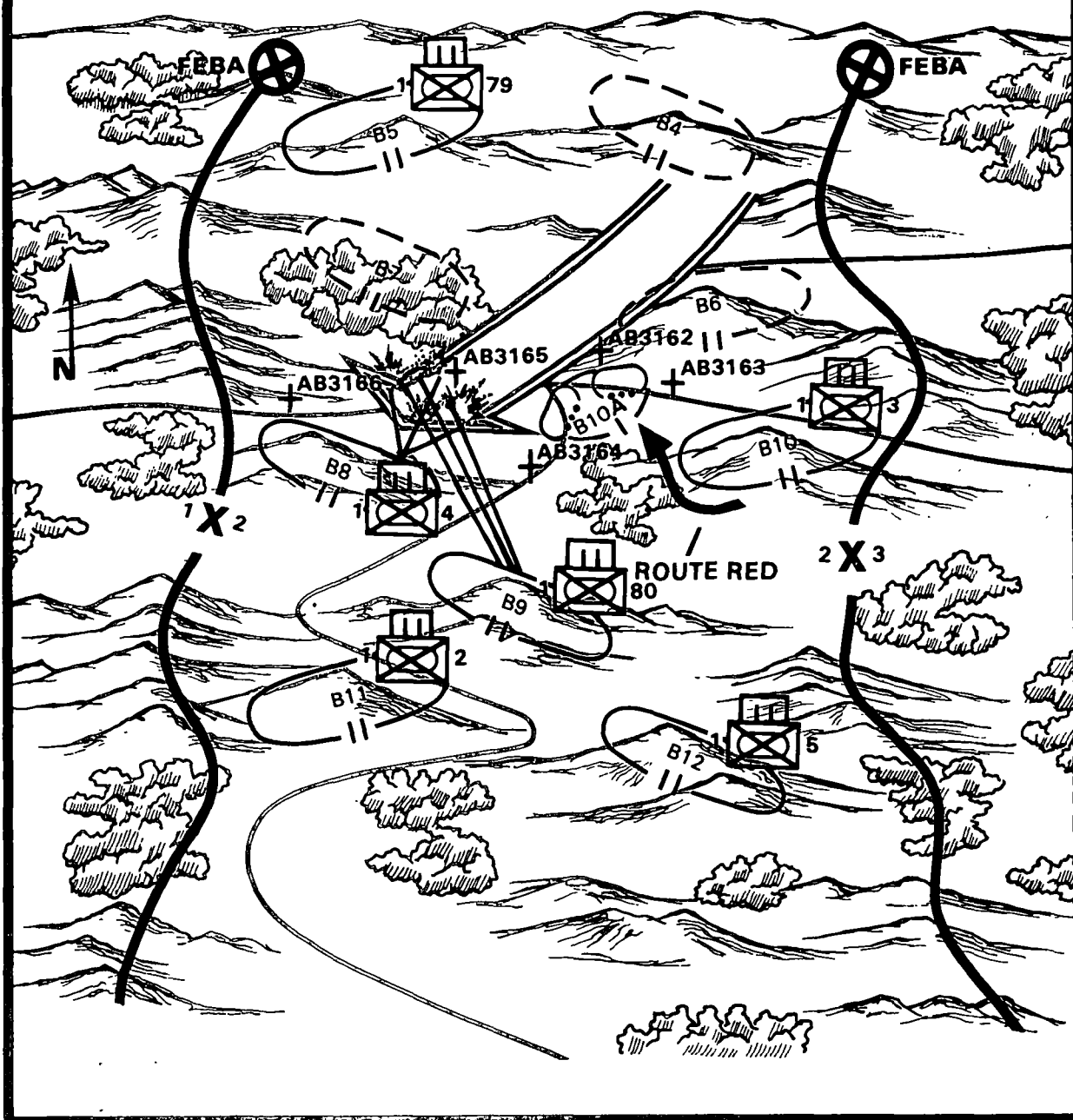
enemy's flank from Battle Position B10A. He alerts the scout platoon to move a scout section north of Battle Position B10 to provide security and early warning and directs the TF FSO to plan targets to support Company Team B's move and to mass fires on the enemy. The TF FSO plans Targets AB3162, AB3163, and AB3164 to screen route RED. Target AB3164 can also be used to mass fires

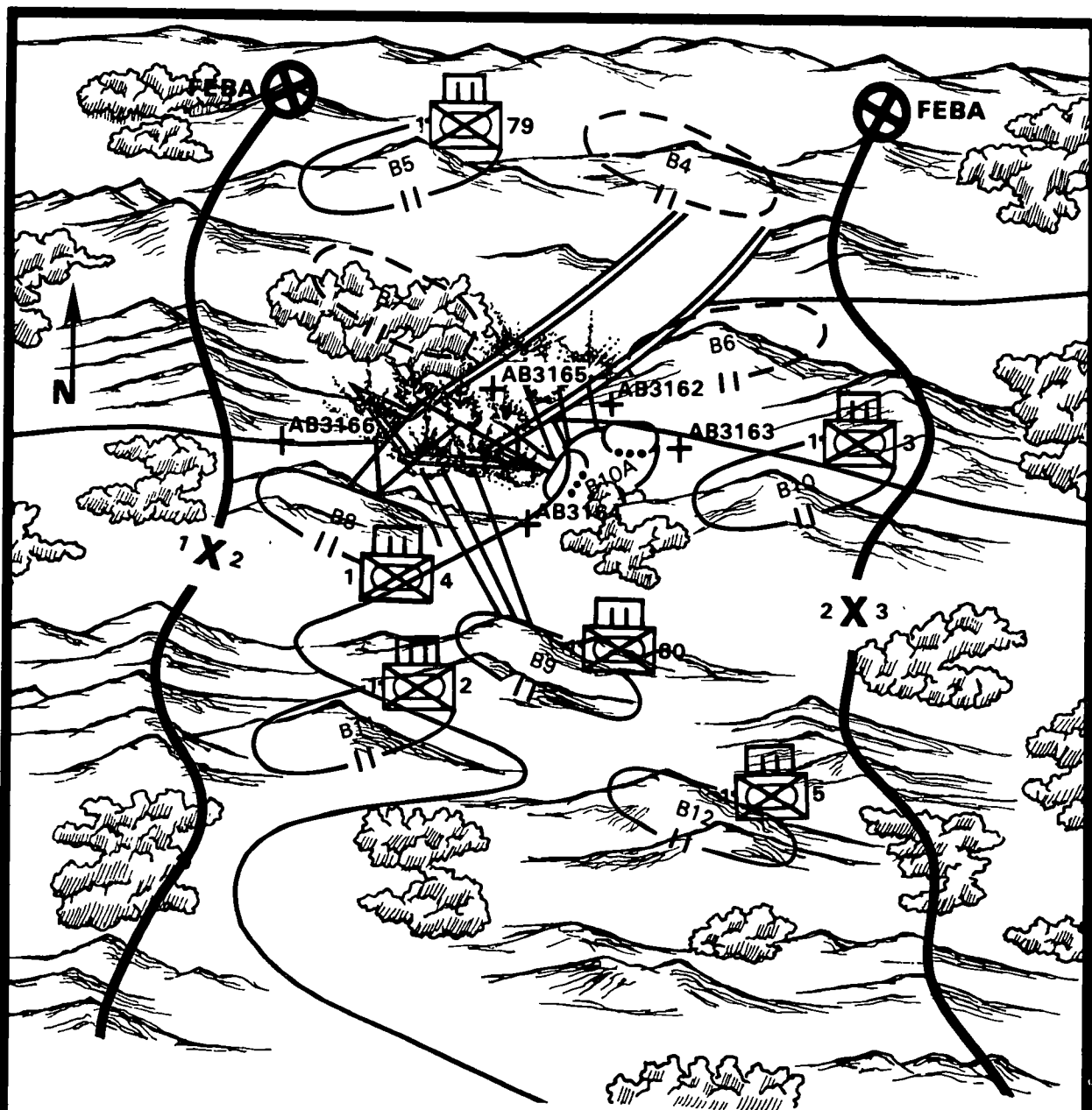
on enemy elements that attempt to move along the road north of Battle Position B10A. Finally, Targets AB3165 and AB3166 will be used to mass indirect fires on the enemy. The TF FSO also requested that TF 1-3 Armor receive priority of fires from brigade. This request was subsequently approved and priority of fires was given to Company Team B for the counterattack.



The company team commander's plan was to move as rapidly as possible using the available cover and concealment of the ground to Battle Position B10A. To obtain maximum surprise, he directed his FIST chief not to screen the route but to be prepared to do so. The FIST chief coordinated with the heavy mortar platoon leader so that the 107-

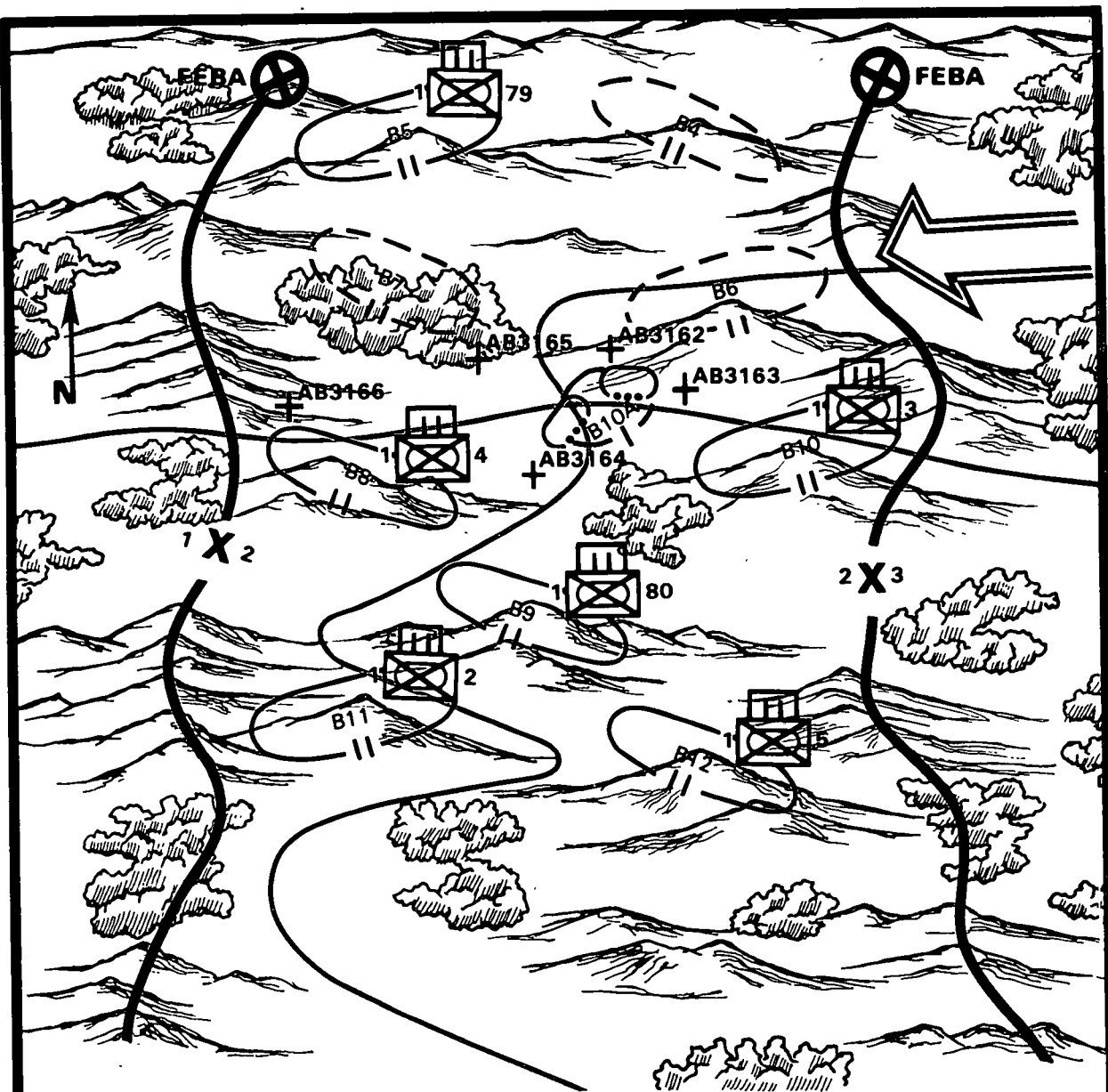
mm mortars would be abreast of the company team's movement and be prepared to fire when directed. Upon reaching Battle Position B10A, the company team commander planned to deploy his mech platoon facing north to block the road while the tank platoons occupied positions facing west.





Company Team B moved from Battle Position B10 along route RED using bounding overwatch techniques and quickly occupied Battle Position B10A. Upon arrival, the FIST chief called for a time-on-target (TOT) mission using Target AB3165. For this mission, he was able to obtain the fires of the two battalions GSR to the brigade's DS FA battalion as well as those from the DS battalion and its reinforcing battalions. Most

of the enemy not destroyed by the TOT became confused making them lucrative targets for the tanks. Firing rapidly and accurately, the two tank platoons were able to destroy many of the enemy's armored vehicles. Those few enemy vehicles which were able to do so sought covered and concealed positions. These were engaged by the FIST chief using DPICM.



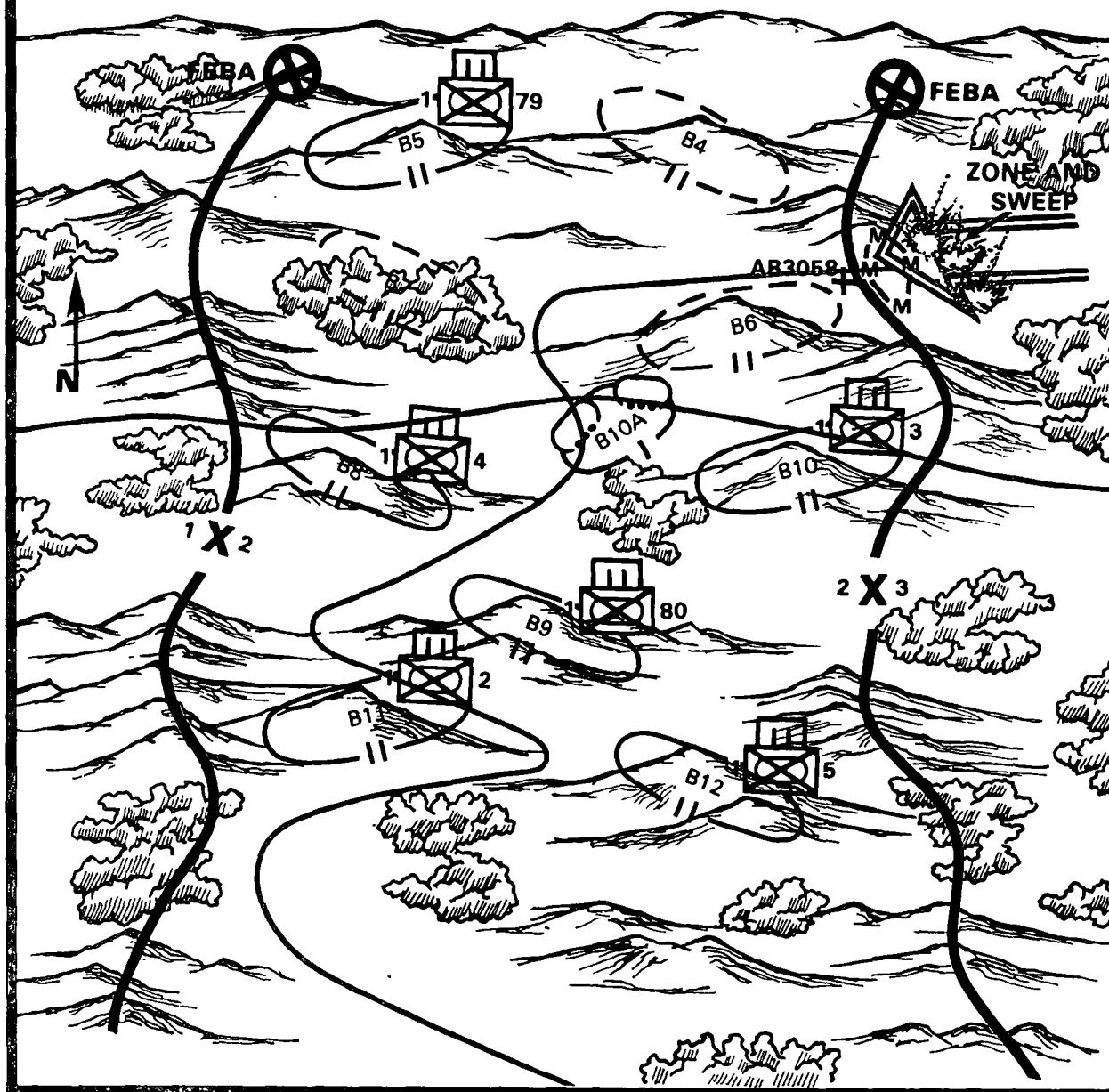
Shortly after the successful counterattack, the TF 1-3 Armor commander receives information that the division G2 has discovered elements of a second echelon tank regiment northeast of the 2d Brigade sector. The enemy unit is moving toward the southwest at about 30 km/hr. Brigade has requested an immediate airstrike on the target and has been notified that two flights of A-10s (four aircraft) loaded with Rockeye and Maverick missiles have been diverted

from another mission. They will arrive on target in about 10 minutes.

Because of the enemy's air defense capability, the airborne FAC will remain 20 km to the south. The ground FAC with TF 1-3 has been directed to control the strike. The TF's ALO and FSO agree that the area just east of Battle Position B6 will be the best place for the strike.

The FSO calls for and receives four battalion volleys of antitank and antipersonnel scatterable mines to slow the tanks in the strike zone. He also arranges to have Target AB3058 marked with two WP rounds to be fired at his command, and to have a 155-mm battery fire a zone and sweep mission (HE-VT) during the strike to keep tanks buttoned up and to suppress SA-7, SA-9, and ZSU-23-4 air defense systems in the target area.

Within 10 minutes, 40 vehicles (T-62s and BTR-60s) emerge from the woods east of Battle Position B6 moving toward Target AB3058. As the lead vehicles hit the FASCAM minefield, two are immobilized by antitank mines; the remainder are forced by the antipersonnel mines to button up. The FSO begins the battery HE-VT zone and sweep of the target area at this time.



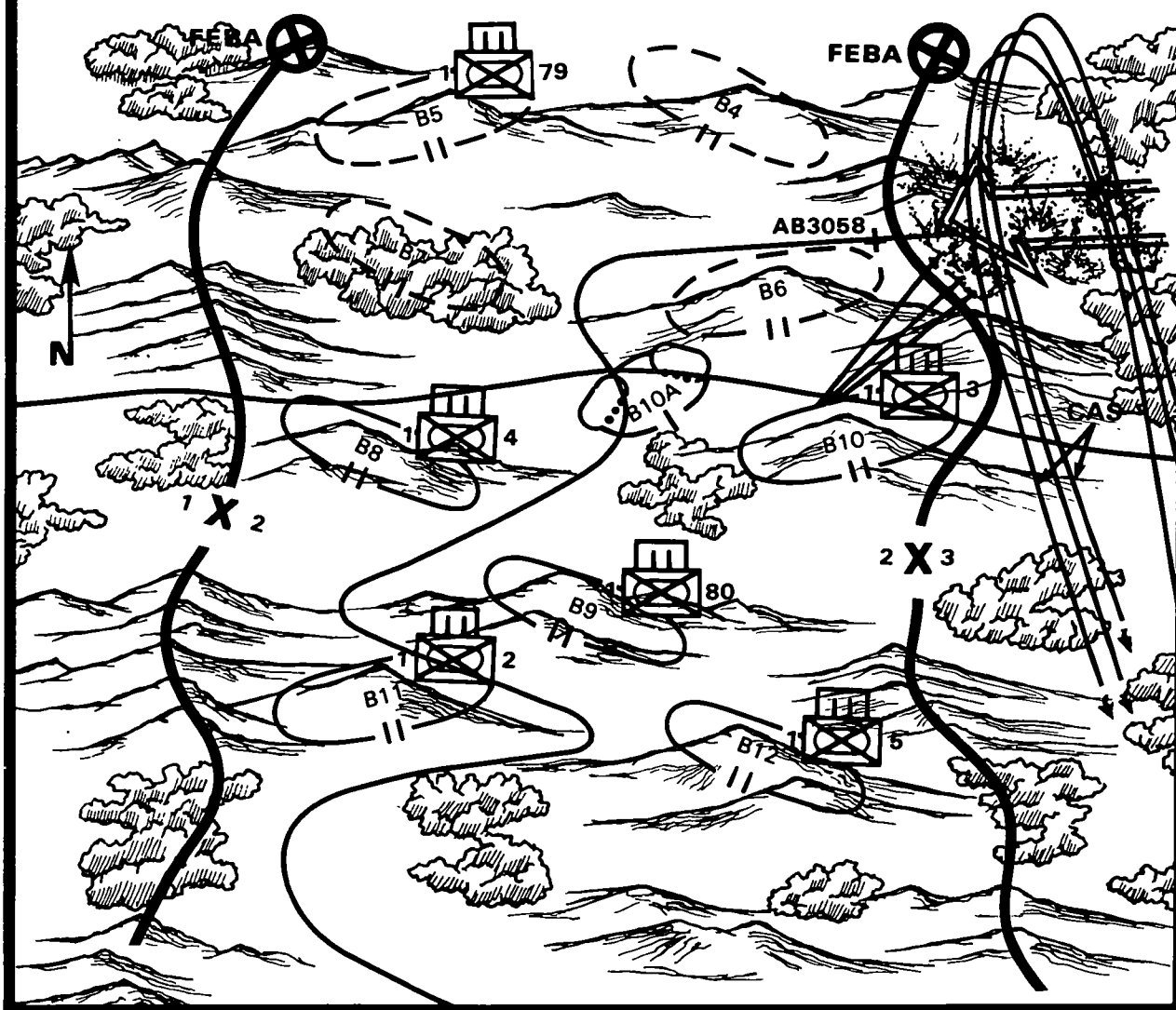
The ground FAC contacts the airborne FAC and is told to contact the flight leaders to insure understanding of the attack information including target location, marking technique, maximum ordinate, and gun-target line for suppressive fires, initial point (IP), and pullup point.

On the ground FAC's signal, the FSO has Target AB3058 marked with two WP rounds, and continues the battery HE-VT zone and sweep fire throughout the airstrike. The four A-10s arrive, acknowledge the marking rounds, and begin attacking the vehicles at the front and back of the column. The A-10s

make multiple passes using the Rockeye munitions against any cluster of tanks and surgically destroying individual tanks with the Mavericks.

The flight of four A-10s destroys 26 vehicles in less than 10 minutes. Six T-62s manage to break out around the minefield and evade the airstrike. They are destroyed by direct fire from Company Teams C and Tank. The remainder of the tanks (about eight T-62s) break off the attack and take cover.

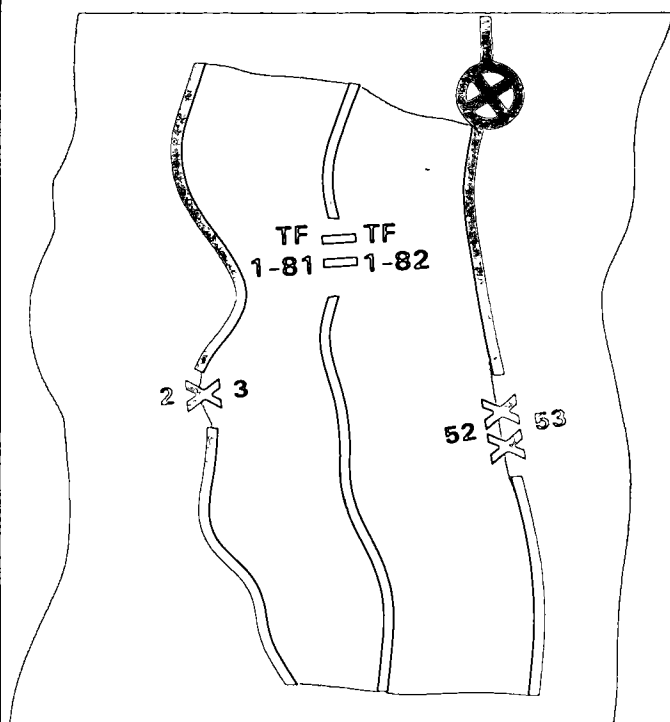
Another airstrike destroys the remaining tanks.



In the main battle area defense example:

- The brigade coordinated fire line was continually moved to the rear as the battle developed.
- Massed FA fires and scatterable mines permitted longer direct-fire servicing time.
- Priority of FA fires was continually shifted.
- The DS FA battalion positioned batteries without interfering with moving maneuver units.
- CAS was employed with FA to destroy a massed armor formation.
- Coordination facilitated continuous fire support during rearward passage of lines.

5-8. How to Support the Economy-of-Force Area



When the area of the enemy's main thrust is determined, forces are concentrated to meet it. At the same time, other portions of the main battle area may have to be thinned out to provide more forces to concentrate at the critical point. At best, the economy-of-force brigade will keep those forces initially allocated for the main battle area in the basic defensive plan and perhaps receive some reinforcement from covering force elements. In our example division

situation, the 1st and 3d Brigades have now become economy-of-force areas because the main thrust is coming in 2d Brigade's area. The 3d Brigade has two mechanized task forces and a DS FA battalion to accomplish its mission. While not in the area of the main thrust, 3d Brigade will still receive considerable pressure. On the basis of this situation, the 3d Brigade commander has deployed his elements as shown.

The two task forces are assigned sectors selected to cover the entire brigade battle area and permit maximum freedom of maneuver. Their goal is to stop any enemy force which enters their assigned area. These forces will fight in much the same way as other forces in the main battle area except that they will be less able to concentrate maneuver forces and they will be more dependent upon massed fire support and obstacles.

In some cases, the task forces may have to fight a delay causing the enemy to deploy time and again thus slowing his advance. The brigade commander must specify the degree of risk the task forces may accept. For example, if the brigade commander's intent is to slow the enemy to gain time and to preserve the integrity of the task forces, he would prescribe a delay of low risk. Often, however, it may be necessary to specify a specific amount of time to be gained. To do

this, the brigade commander would direct that the enemy be held forward of a specified line or until a certain event, such as a counterattack in an adjacent brigade's area, has occurred. A delay of this type is of high risk to the task forces and is intended to gain time at significant cost if necessary.

If a deep penetration develops or a flank(s) becomes vulnerable, the task force missions may be changed to "delay in sector." This mission will provide more flexibility to TF commanders to avoid loss of major portions of their force, to stay in front of the enemy, and to cover the flanks of their area. The tactics employed in this case are similar to those of a delaying task force in the covering force area.

If it is necessary for the economy-of-force brigade to fight deep to the rear, there may be a point at which they must stop any further enemy advance. At that time, brigade elements will assume whatever risk is necessary and exploit all means available to stop the enemy.

In an economy-of-force area, maximum use must be made of massed indirect fires and obstacles to destroy, slow, blind, and canalize the enemy. This optimizes the effects of direct-fire weapons and compensates for the friendly unit's restricted ability to concentrate maneuver forces.

□ **How to Support the Economy-of-Force Area Brigade**

FSCOORD Activities. The FSCOORD at brigade level is the DS FA battalion commander. His contacts in the planning and coordination of fire support are shown in figure 5-16.

The FSCOORD in the economy-of-force area faces many of the same problems as the FSCOORD in the main thrust. He also must coordinate a change of fire support responsibility (when the covering force cavalry squadron comes under control of the 3d Brigade) and he must insure a smooth transition during the squadron's rearward passage of lines at the FEBA.

Like the forces in the main thrust area, *the economy-of-force brigades must fully exploit the advantages of the defender.* This is particularly true at the FEBA where terrain, obstacles, well prepared positions, and detailed planning should allow the economy-of-force brigades to take a high toll of the relatively few enemy units opposing them.

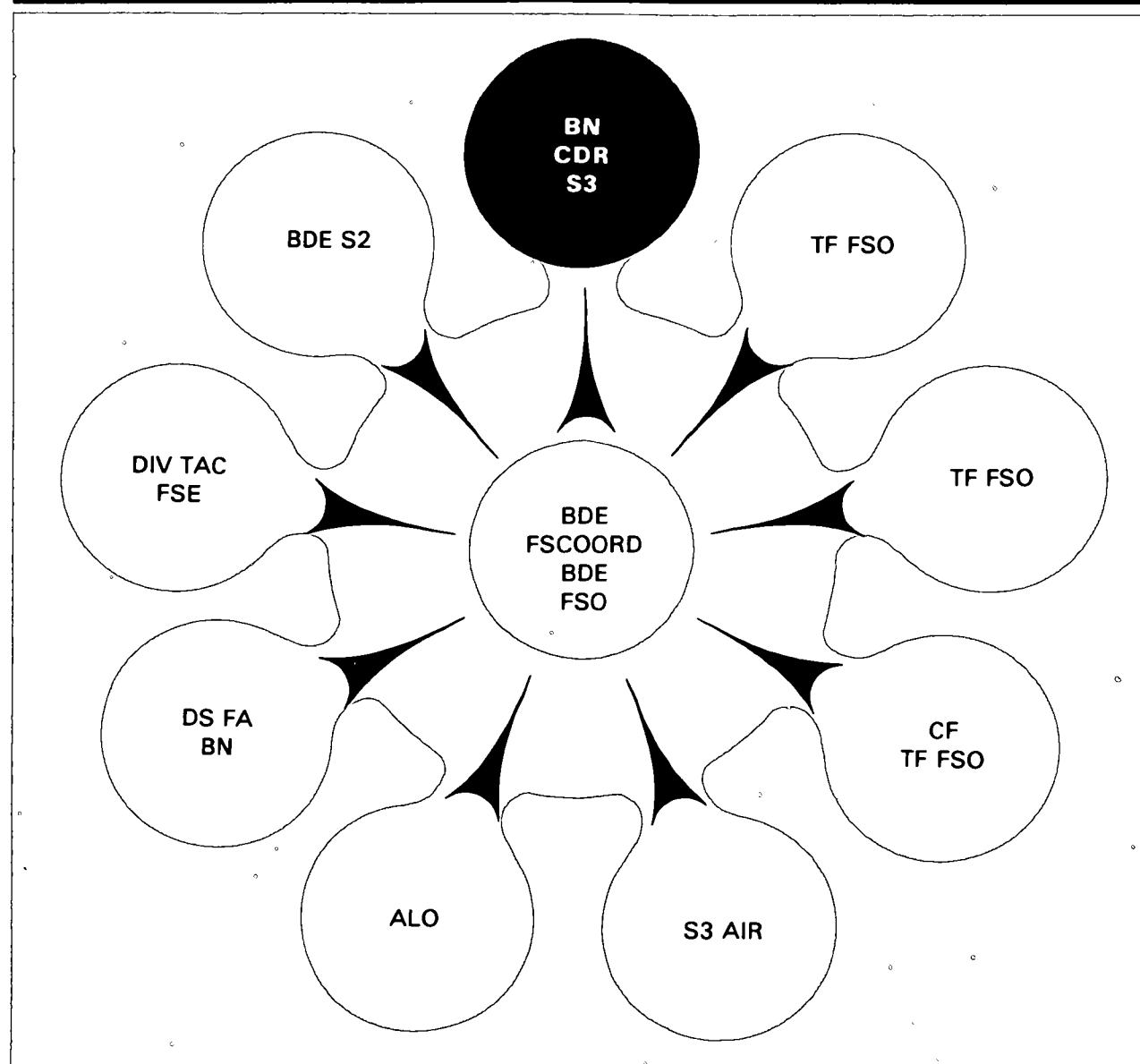
Fire Support Assets. The economy-of-force brigade (the 3d Bde in the example case) will have its habitual direct support 155-mm battalion. It also will have access to the fires of the division GS and GSR battalions. It will have access to CAS assets; however, the 2d Brigade has priority.

Fire support for this fight will not differ greatly from that in the main thrust area except in the assets available. The task forces in the economy-of-force brigade will execute their plans in much the same manner as described in earlier paragraphs. Depending upon the terrain, the brigade commander may fight his task forces from battle positions. Likewise, the task force commanders may assign their teams battle positions. This will depend on the factors of mission, enemy, terrain, and time, and in particular, the characteristics and amount of terrain assigned the task force.

Task force commanders will position the bulk of their combat power forward in an attempt to stop the enemy at the FEBA. *Flank security is especially important in this situation.* Fire support here will emphasize maximum use of organic mortars and the DS FA battalion to slow, blind, and canalize the enemy and to enhance direct fires.

If the task forces are forced from their initial positions, the fight will take on many of the characteristics of the covering force battle. Here, fires to assist in disengaging and withdrawing to new positions take on increased importance as the brigade seeks to inflict maximum casualties on the enemy without losing freedom of movement.

FIGURE 5-16. BRIGADE-FSCOORD/FSO CONTACTS.



As the economy-of-force brigades approach the rear brigade boundary, *they must accept a greater degree of risk for their task forces*. This is necessary to hold the enemy within the main battle area and prevent his advance into the rear area.

In all cases, the brigade FSCOORD must focus his attention on the planning and executing of fires on targets of interest to the brigade as a whole. The battalion FSOs will plan and execute the close support fires. The brigade FSO should seek out deeper targets and whenever possible attack these with the division's GS FA and CAS while the engaged battalion TFs are using the fires of the DS field artillery.

Fire Support Organization. The brigade commander may elect not to establish a priority of fires initially until the enemy's intentions become clear.

Positioning. Positioning of the brigade's DS FA battalion is *extremely critical*. Initially, firing elements will be in forward supplementary positions to support the covering force. Units will then move back to well-hardened positions echeloned in depth to support the main battle area fight. Alternate positions must be established from that point and even into the rear area (with division approval). Here, *nothing is more important than movement by echelon or battery*, because with no reinforcing FA, if the DS battalion cannot provide continuous fires, there may be no FA fires.

Fire Support Coordination. Critical coordination occurs at the change of control of covering force elements and at the FEBA. After that, lateral coordination between brigade and adjacent battalion FSCOORDs in the 2d and 3d Brigades becomes *extremely important*. If enemy forces break through near the brigade boundary or if they enter the battle area of either unit from the flank, then fire support must be used immediately to influence the situation until maneuver forces can adjust to deal with it. It is here that CAS and attack helicopters may be used to best

advantage. For a discussion of attack helicopters reinforcing a unit by fire, see FM 71-2, *The Tank and Mechanized Infantry Battalion Task Force*, chapter 5 and FM 17-50, *Attack Helicopter Operations*.

In the economy-of-force area:

- Organic mortars must be used to the fullest extent possible.
- Any available GSR FA, GS FA, or CAS should attack deep targets.
- The importance of moving DS FA by echelon cannot be overemphasized.

☐ How to Support Light Infantry in the Main Battle Area

The concept of active defense previously discussed *depends on the tactical ground mobility and massed firepower capabilities of armored and mechanized forces*. Infantry forces lack the required mobility, firepower, and protection to conduct the active defense. Infantry elements can, however, complement armored or mechanized forces when employed in urban areas, or in rugged, broken, or heavily forested terrain. Skillfully employed infantry in the right terrain can defeat a numerically superior enemy force even when the enemy is supported by some tanks.

Concept of Defense with Light Infantry. Infantry forces fight from well prepared, carefully selected, relatively fixed positions. Such a defense requires time to study and prepare the terrain. In this position defense, units are arrayed linearly or in depth based on the enemy force and the terrain. Antipersonnel or antiarmor weapon positions are selected that will give maximum effectiveness against the principal threat to defeat and neutralize enemy attempts to

penetrate or bypass the defense. See FM 7-20, chapter 5, for more details. Once positions are occupied, minimum movement is anticipated. Movement usually is limited to nearby prepared alternate or supplementary fighting positions.

The fundamentals of defense as described in paragraph 5-3 generally apply to infantry forces. However, the *skillful siting and employing of weapons* require even more emphasis. This requirement presents another fundamental of defense for infantry: *Maximize effectiveness of key weapons*. The defender must organize his defense around weapons most effective against the principal threat; e.g., TOWs against tanks and machineguns and indirect fires against infantry. In situations requiring defense against armor, positions are selected to exploit antiarmor weapons capabilities. Against lighter forces, machineguns and other antipersonnel systems (including mortars and FA) are the primary considerations in selecting positions and organizing the force.

The fundamental of concentration is applied by *initial positioning, meticulous fire planning, and rapid massing of all direct and indirect fires*. Movement to concentrate is kept to the absolute minimum. The primary means of concentrating combat power as the battle develops is *the timely allocation and application of mortars, FA, and CAS*. When available, attack helicopters and naval gunfire also add significantly to the defender's ability to concentrate combat power. All these assets can be quickly shifted to critical points to delay, disrupt, or destroy an enemy attack. They can then be shifted again to concentrate against other enemy actions.

Fighting as a combined arms team is also critical to exploit the strengths and shield the vulnerabilities of all elements. *Complete integration of all combat assets* is critical because infantry forces lack the mobility and

firepower of mechanized and armored forces. Enemy force momentum, whether mounted or dismounted, must be reduced to permit effective application of all weapon systems. For example, artillery attacks the enemy at long range, employing scatterable mines where appropriate to slow, canalize, and destroy the enemy. Engineers help improve obstacles and minefields. Tactical aircraft add massed fires, and antitank weapons destroy individual vehicles. Every combined arms element assists.

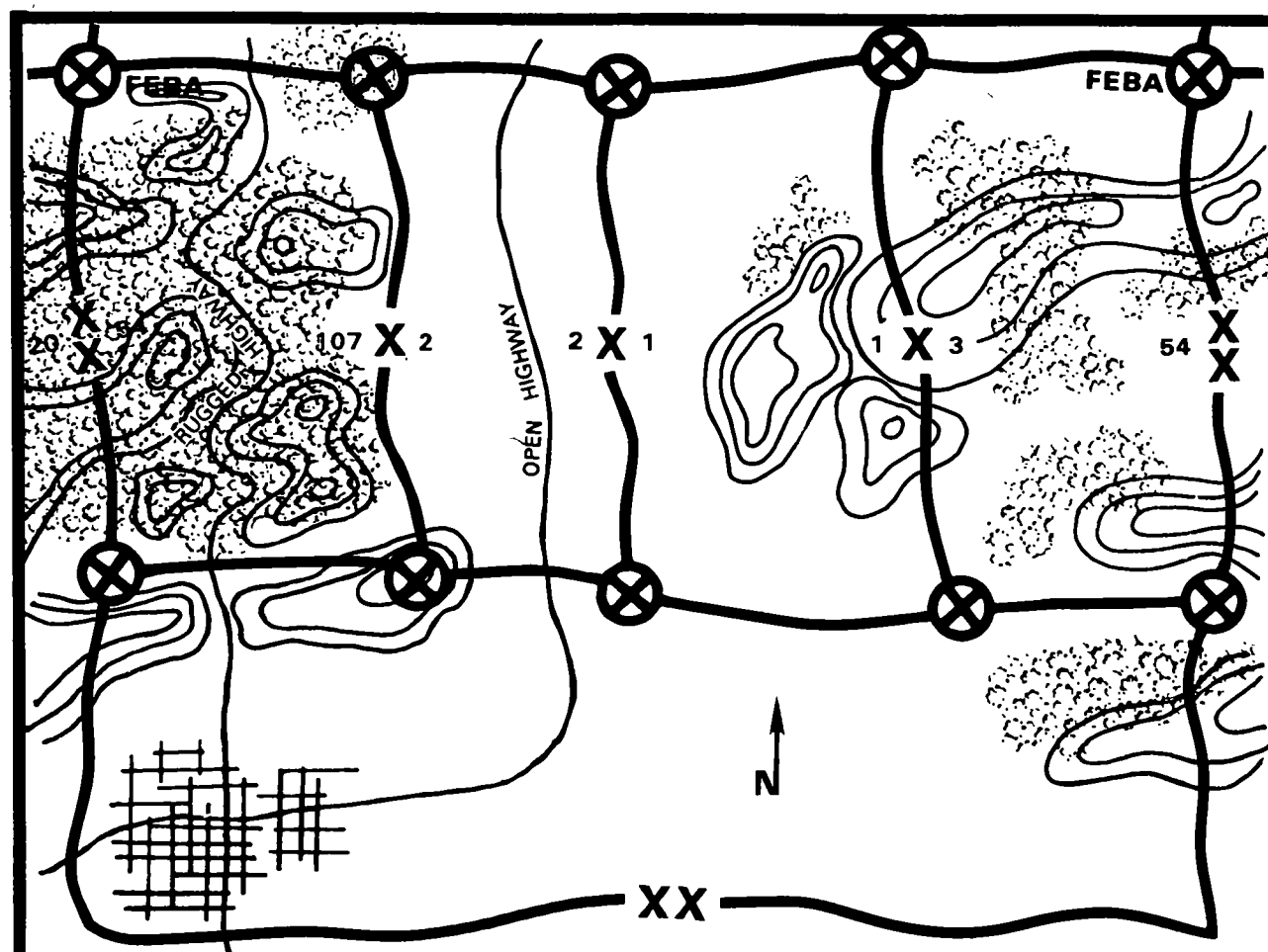
Forms of Defense with Light Infantry. There are two basic forms of defense for infantry—the *linear position defense* and the *position defense in depth*. The *linear position defense* emphasizes interlocking and overlapping observation and fields of fire along the FEBA to preclude penetration or loss of specific terrain. Security forces of the forward main battle area battalions as well as those of higher headquarters provide early warning and delay the enemy to gain time for an adequate preparation of fighting positions within the main battle area. Small reserves reinforce the defense, block penetrations, or conduct small counterattacks to regain terrain.

The *position defense in depth*, used along high-speed avenues of approach, contains a series of mutually supporting antiarmor battle positions on armor restrictive terrain. Antiarmor positions are protected by infantry and strengthened by obstacles. Battle positions are arrayed in depth with forces remaining in position except for local or internal movement. *Depth is derived from initial positioning—not maneuver*. The position defense in depth is designed to defeat a mounted enemy forward of the battalion rear boundary with simultaneous fires from multiple battle positions. The enemy is engaged at long range with indirect fires, then by combined direct and indirect fires. Security forces are also deployed in the position defense in depth.

Fire Support Planning and Coordination in the Position Defense. The pattern of fire support planning and coordination considerations for the infantry FSCOORD in the position defense are essentially the same as for an armored unit in the active defense. However, certain areas need special attention.

- Fire support makes up a greater portion of the commander's total combat power.
- Massed fires are critical to reduce mobility of attacking forces to the level of the defender and canalize the enemy into desired places for destruction.
- Close defensive fires, especially final protective fires, are more common because units hold their assigned positions.
- Organic 105-mm howitzers have fewer ammunition options (no scatterable mines or dual-purpose, improved conventional munitions).
- Close air support is more often required to destroy large armored units.
- Obstacles and fires must be meticulously planned to complement one another.
- Counterfire becomes more critical due to less armor protection for friendly forces.

Situation 1. Light Infantry Brigade Defense Against Armored Forces



The 54th Mechanized Division is defending in sector against elements of a combined arms army of three motorized and one tank division. The terrain varies from a very restrictive, rugged, and heavily forested area in the west to an open and rolling area in the center, returning to hilly and sparsely wooded terrain in the east. A major communications network lies in the southwestern portion of the division sector and is protected by the rugged terrain to the north. Two large highways run through the division area, one through the open terrain and one through the rugged forested area. Both highways lead to and through the communications center.

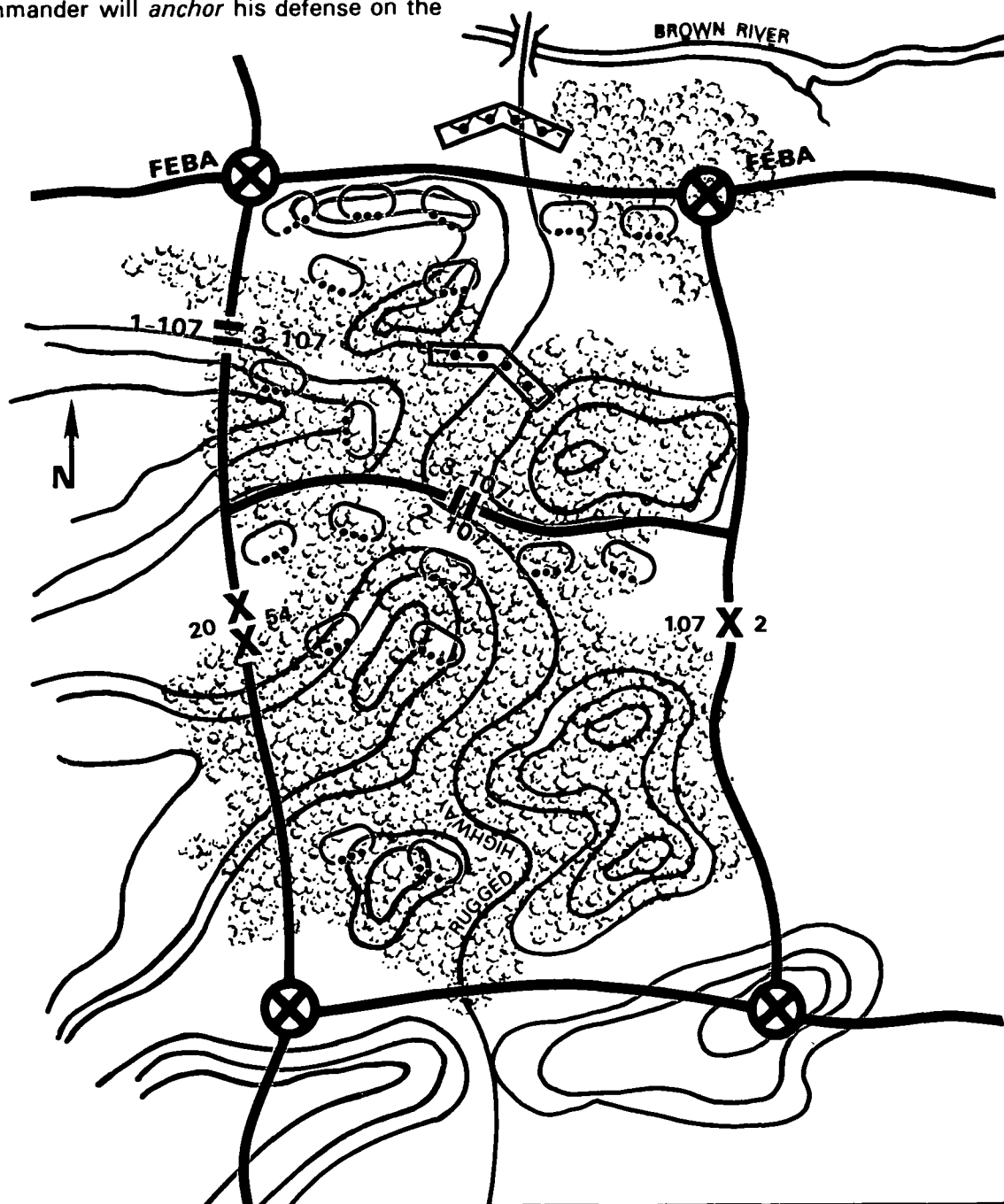
An enemy attack to secure the communications center would most likely be

mounted along the open and rolling terrain in the left center of the division sector, and then turn west toward the town. If the enemy is unable to attack along this route around the rugged terrain, he will probably attempt to attack along the highway through the restricted area to punch some forces into the communications center on the south.

The 54th Mechanized Division is not well suited to combat in the rugged terrain in the west, which restricts its mobility. Therefore, the corps commander has attached the 107th Light Infantry Brigade (Separate) to the 54th Mechanized Division to defend this restricted area. After analyzing the situation and forces available, the commander distributed his brigades as shown.

He employs the 3d Brigade on the east in the hilly and wooded terrain in a relatively wide sector. The 1st Brigade sector is narrower, since the terrain opens up somewhat. The 2d Brigade is given a very narrow sector along the most likely high-speed avenue into the division. The commander will *anchor* his defense on the

west with the 107th Light Infantry Brigade (Separate) in the rugged terrain. Two battalions of the brigade will be deployed in depth along the highway and the third battalion will be positioned along the FEBA on the division left flank (tying in with the 20th Inf Div in the mountains on the west).



The covering force, composed of elements from 54th Mechanized Division and a corps armored cavalry regiment squadron, is about 36 km north of the FEBA (the corps armored cavalry regiment squadron is operating in the relatively open and rolling covering force area forward of the 107th Brigade). The division commander's intent is to concentrate mechanized and armored forces to blunt the enemy attack in the open and rolling terrain while preventing the enemy from getting through along the mountain highway. The 107th Brigade will retain the rugged terrain in the west and coordinate with the 2d Brigade to prevent the enemy from bypassing on the east. The 107th Brigade's armored cavalry troop will be held as a mobile reserve. As divisional elements with the covering force return, they will be used to further concentrate forces in the area of the enemy main attack.

If the enemy does attempt to attack through the rugged terrain, the 107th Brigade can expect to be confronted by at least a reinforced motorized rifle regiment. Because of the poor trafficability and dense vegetation in the area, the commander expects that motorized forces will dismount in their attempt to get through his defenses.

Vegetation is dense and observation and fields of fire are relatively poor, especially toward the upward portion of the hills. Several unimproved roads and trails go through the area. Only the highway through the saddle will accommodate a large number of vehicles at good speed. The commander must capitalize on every means available to reduce the mobility of the enemy and force him to attack dismounted.

Major assets available to the brigade include:

107 LT INF BDE (SEP)

- | | |
|---|--|
| ☐ three rifle battalions (three rifle companies and a combat support company each),* | ☐ access to fires from 54th Division Artillery elements within range, |
| ☐ organic armored cavalry troop, | ☐ access to CAS from division, |
| ☐ organic DS FA bn (105 T), | ☐ fires from organic mortars. |
| ☐ organic engineer company, | |

*Each rifle company has 9 Dragon trackers and a TOW section of 2 TOWs.

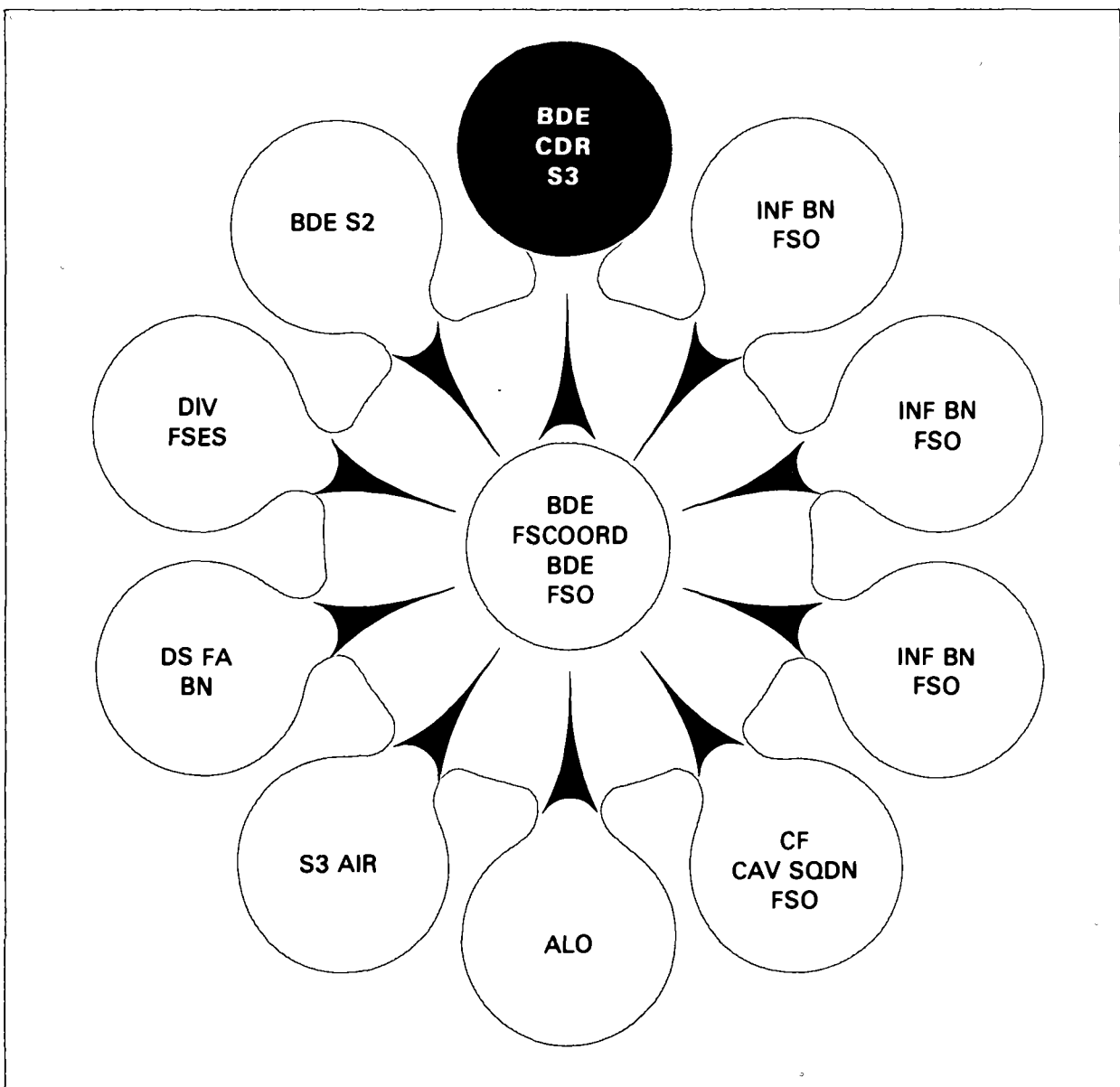
Each combat support company has an antitank platoon with 12 TOWs.

FSCOORD Activities. The FSCOORD for the 107th Light Infantry Brigade (Separate) is the 105-mm DS battalion commander. He is assisted by the brigade fire support officer located at the brigade TOC. The FSCOORD's fire support responsibilities will include supporting the 107th Brigade defense and supporting the 2-201st Cavalry

(covering force element) when it comes under control of the 107th Brigade at a point forward of the FEBA. The FSCOORD's contacts are shown in figure 5-17.

Close coordination between the armored cavalry regiment squadron FSO, the 107th Brigade FSO, and the FSOs of the two

FIGURE 5-17. FSCOORD CONTACTS.



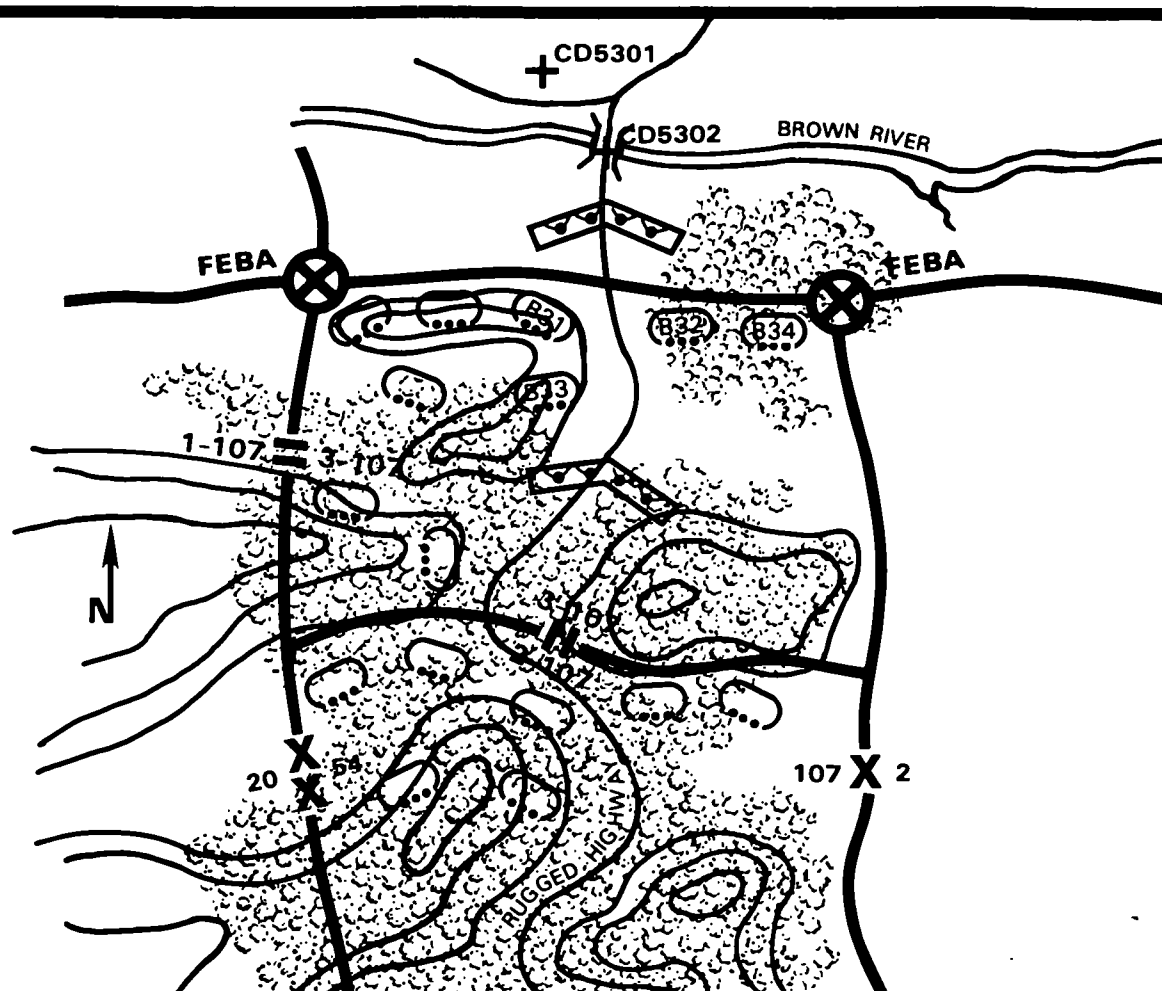
forward infantry battalions is needed to insure that the handoff of the battle from the covering forces to 107th Brigade main battle area forces and the subsequent rearward passage go smoothly. The passage of FA support responsibility for support of 2-201st Cavalry is facilitated by the fact that the batteries of the 105-mm battalion fire in support of the 2-201st Cavalry from forward supplementary positions prior to the change of control.

Specific fire support tasks for infantry in the main battle area orient on close support of maneuver forces with special emphasis on integrating indirect fire with the fires of the TOW and Dragon. *Coordination and timing of these fires will be especially critical*, since the restrictive nature of the terrain will cause most direct-fire engagements to take place at closer range than in open terrain. Protective fires for friendly elements are *more critical* because they have less mobility and cannot disengage as easily as mechanized and armored forces.

Counterfire becomes critical because infantry, especially when it is moving, is extremely vulnerable to enemy indirect fires. Further, the brigade has only one FA battalion, and it has limited range (11,500 meters) and no DPICM or FASCAM ammunition capability. The link between the brigade, its DS battalion, and division artillery is particularly critical if additional FA fires are to be obtained, especially DPICM or FASCAM. In this case, the 54th Division Artillery positioned one of its corps reinforcing 155-mm battalions within range to provide these fires as required.

Key fire support tasks for light infantry in the main battle area are:

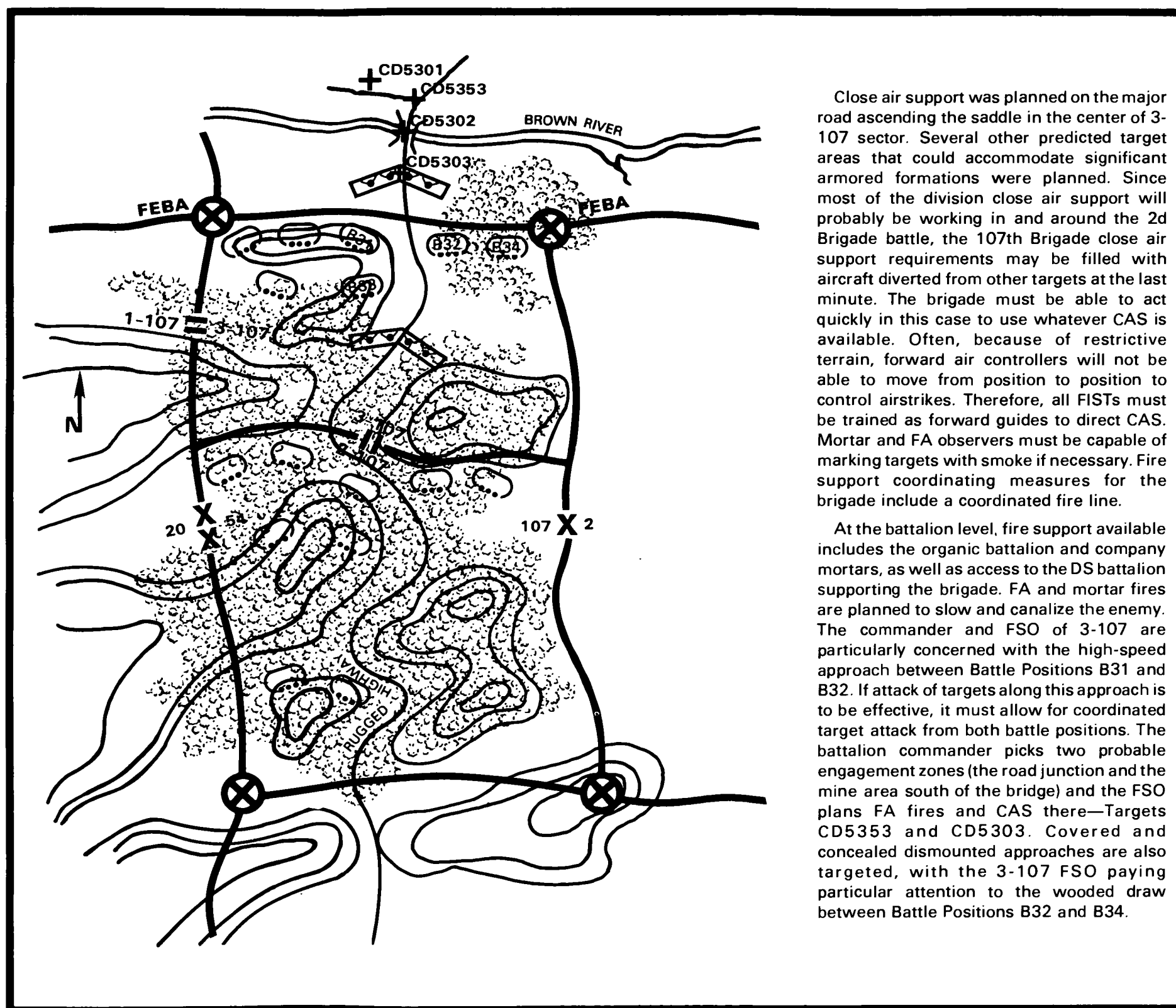
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|--|--|
| ☐ close support of maneuver forces, | ☐ counterfire, and |
| ☐ integration of indirect fires with the fires of the TOW and Dragon, | ☐ augmentation of the fires of the DS FA battalion with fires from division artillery battalions. |
| ☐ protective fires for friendly elements, | |



Fire support assets at the brigade level were oriented to meet the following needs:

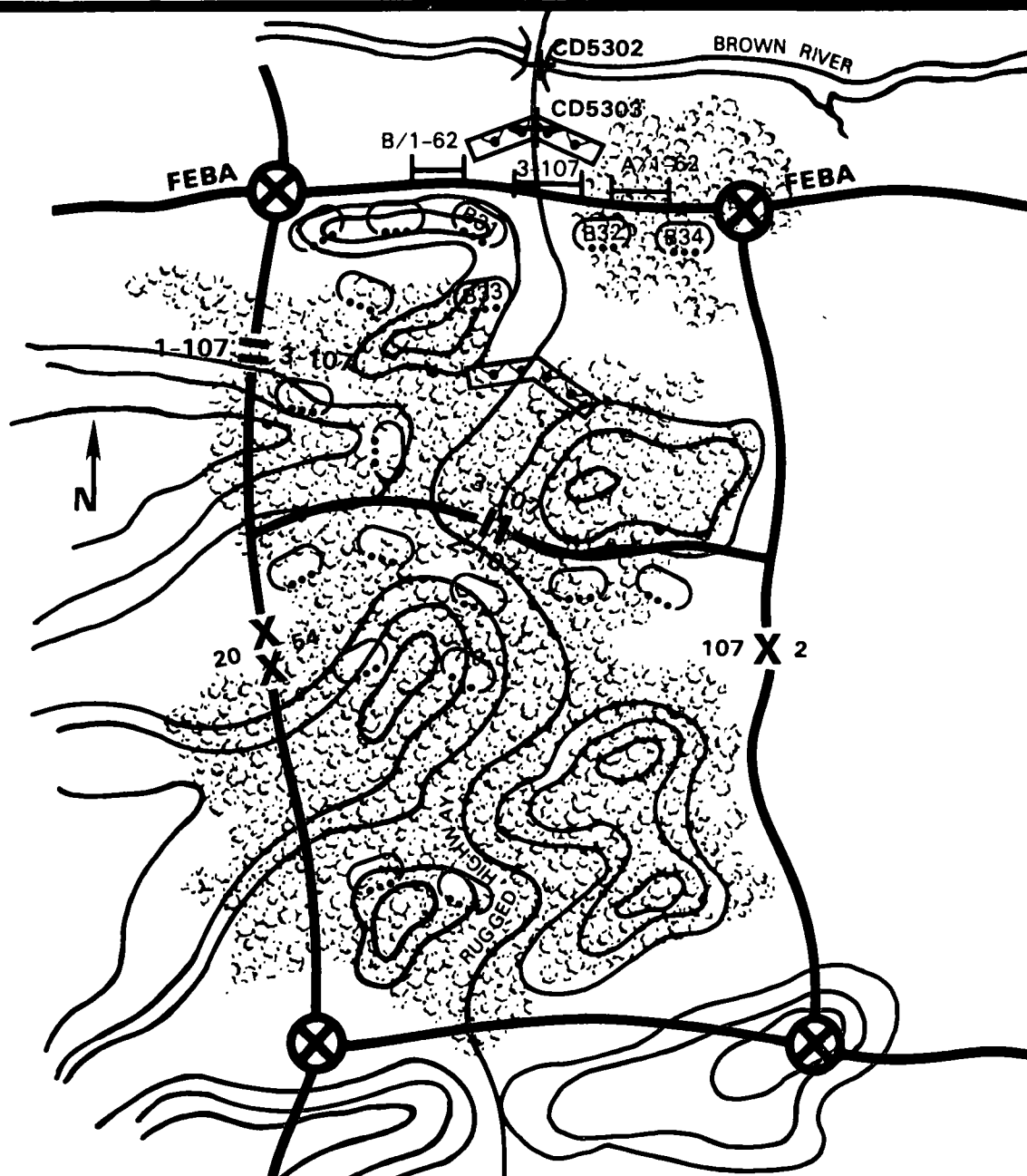
- Priority of FA fires was given to 3d Battalion, 107th Infantry, astride the major avenue of approach into the brigade area.
- The brigade commander allocated two of the 105-mm battalion FPFs to 3-107th Infantry and one to 1-107th Infantry.
- Fires were planned on targets critical to the brigade—specifically the bridge and the protected assembly area in the center of the brigade sector (Targets CD5302 and CD5301).

After moving from the forward supplementary positions from which it supported the covering force, the FA battalion was positioned in defilade on the reverse slope of the hill complex near its base. Because of positioning requirements and range limitations, division artillery will engage long-range targets with GSR or GS units. Coordination on deep targets was made with 54th Division Artillery to provide additional fires as required. Counterfire operating procedures were confirmed and an additional countermortar radar was positioned to assist target determination in that sector. The availability of any of these GS and GSR units is, of course, subject to the need for fires in the anticipated breakthrough sector.



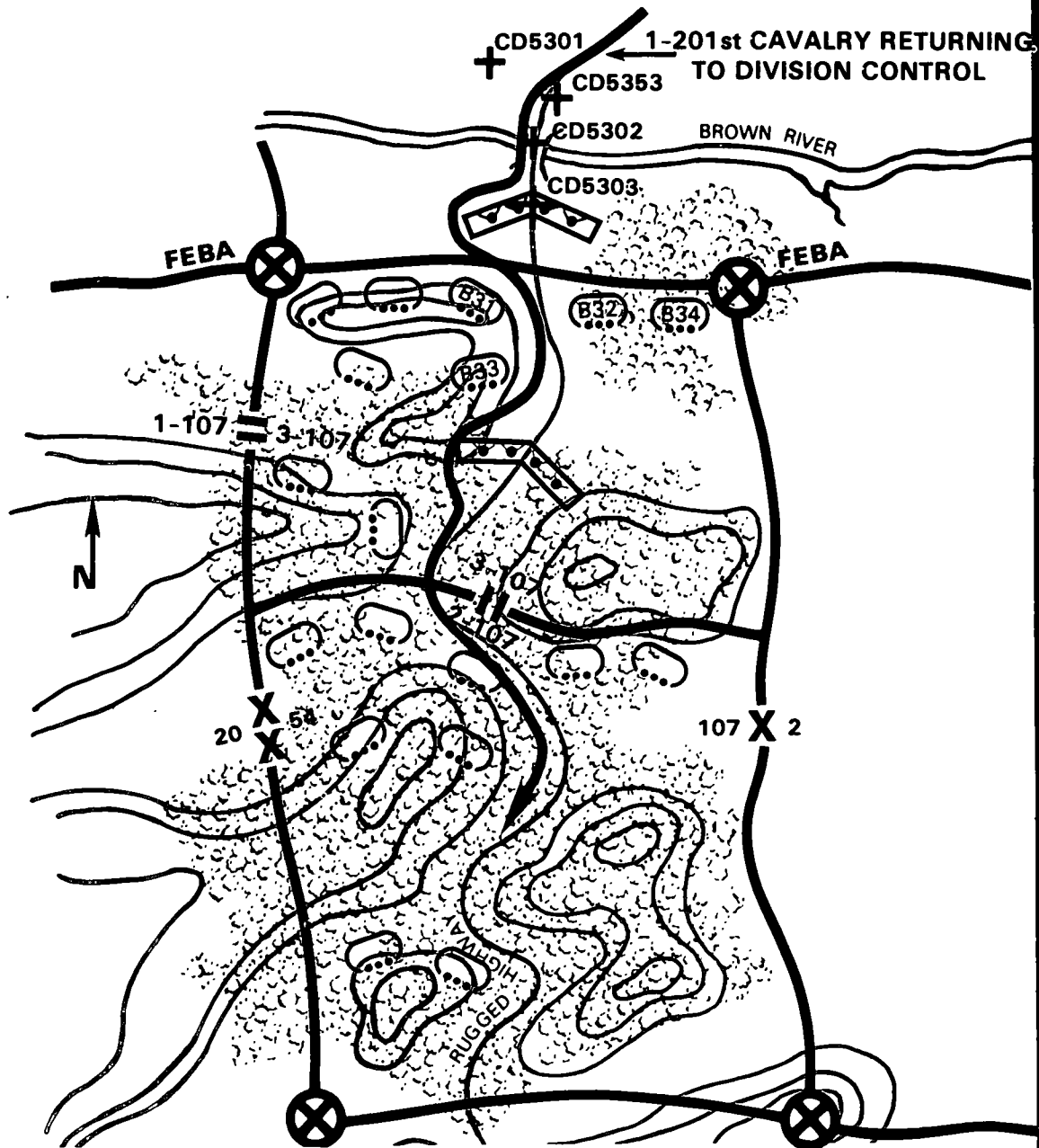
Close air support was planned on the major road ascending the saddle in the center of 3-107 sector. Several other predicted target areas that could accommodate significant armored formations were planned. Since most of the division close air support will probably be working in and around the 2d Brigade battle, the 107th Brigade close air support requirements may be filled with aircraft diverted from other targets at the last minute. The brigade must be able to act quickly in this case to use whatever CAS is available. Often, because of restrictive terrain, forward air controllers will not be able to move from position to position to control airstrikes. Therefore, all FISTs must be trained as forward guides to direct CAS. Mortar and FA observers must be capable of marking targets with smoke if necessary. Fire support coordinating measures for the brigade include a coordinated fire line.

At the battalion level, fire support available includes the organic battalion and company mortars, as well as access to the DS battalion supporting the brigade. FA and mortar fires are planned to slow and canalize the enemy. The commander and FSO of 3-107 are particularly concerned with the high-speed approach between Battle Positions B31 and B32. If attack of targets along this approach is to be effective, it must allow for coordinated target attack from both battle positions. The battalion commander picks two probable engagement zones (the road junction and the mine area south of the bridge) and the FSO plans FA fires and CAS there—Targets CD5353 and CD5303. Covered and concealed dismounted approaches are also targeted, with the 3-107 FSO paying particular attention to the wooded draw between Battle Positions B32 and B34.



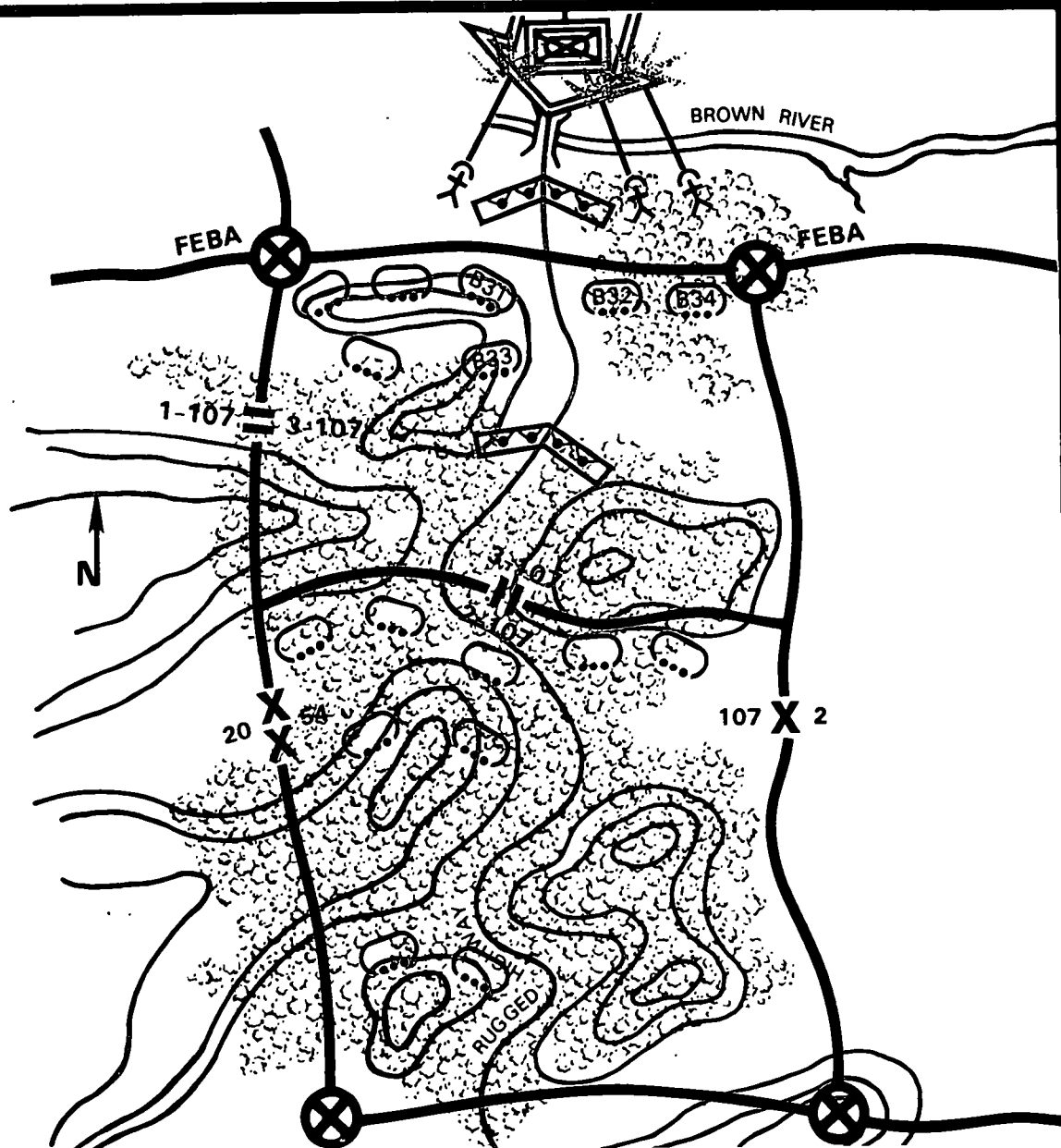
Gaps between companies are covered with indirect as well as direct fire to prevent infiltration or penetration by dismounted troops. Final protective fires are allocated to the most threatened areas to provide massive fires to break up enemy assaults and are closely tied in to machinegun final protective fires in and between company battle positions.

At company and platoon level, FIST members plan long-range fires beyond the range of their direct-fire weapons to facilitate direct-fire engagements, and they plan close defensive fires directly in front of their positions.



The 107th Brigade has been in position about 36 hours, and the division covering force elements have passed into the main battle area. The enemy main attack is coming toward the 2d Brigade to the east. The 1-201st Cavalry passed through the 107th Brigade and returned to division control. Other covering force maneuver elements are

attached to 2d Brigade to reinforce the defense of that sector. As the battle develops and the enemy is significantly slowed and disrupted in the 2d Brigade sector, some elements of the enemy force appear to be moving toward the highway approach through the 107th Brigade sector.



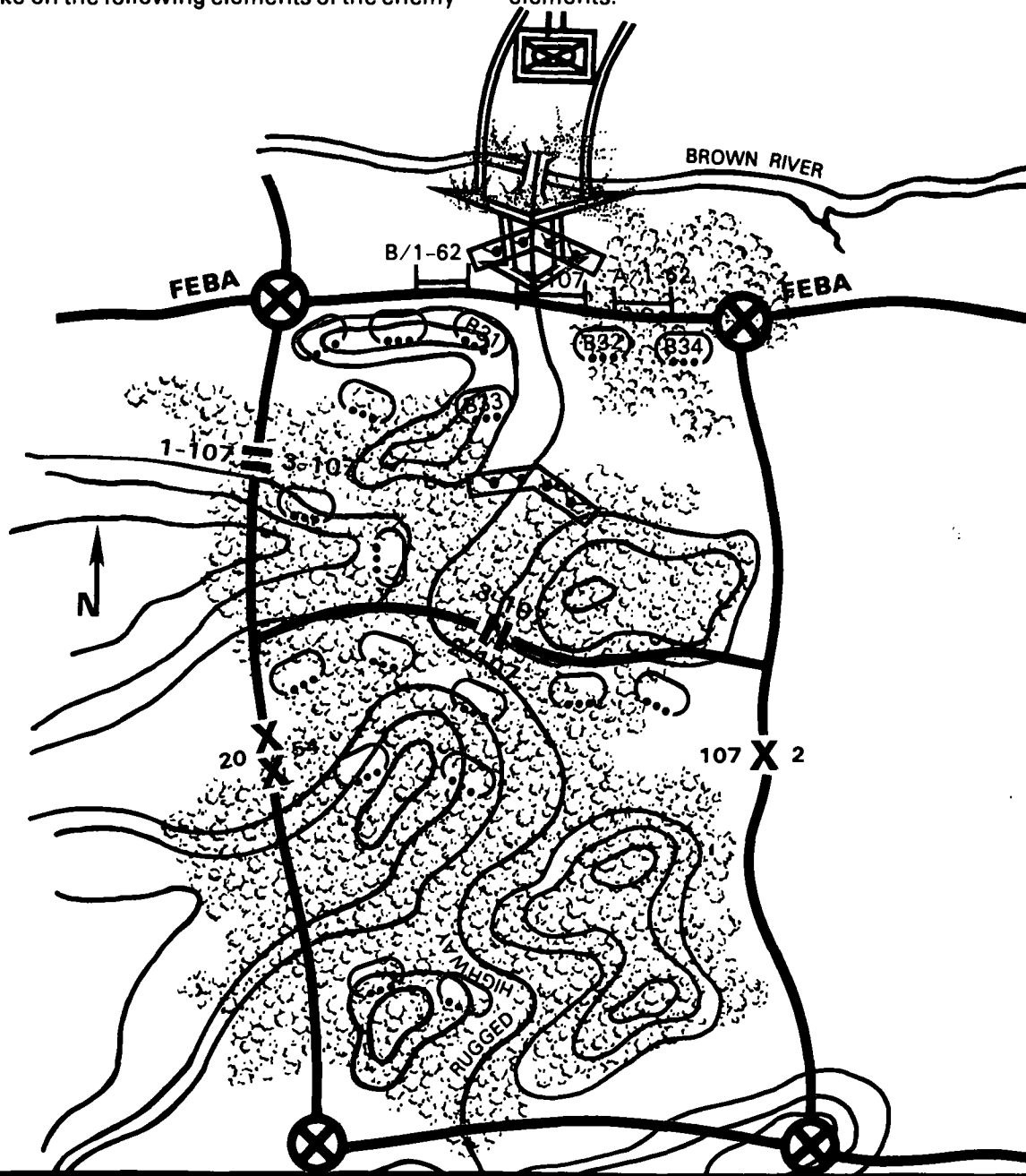
Scout elements of 3-107 in the area of the highway report the approach of a motorized rifle company (about eight BMPs) and three tanks at a range of about 4,000 meters. Scouts call for long-range fires on the enemy and continue to report the specific direction and approach of all enemy elements.

The battalion commander decides to engage them with TOWs in the security force as soon as they come within range. Mortar

and FA fires are coordinated to complement the TOW fire. As the scouts engage with TOWs, the battalion FSO calls for smoke behind the enemy company to isolate deeper enemy forces from the engagement area. The combined fires of the FA and mortars slow the enemy considerably and TOW fires destroy two tanks and seven BMPs. The scouts and TOWs then withdraw to the main battle area under cover of FA and mortar fires.

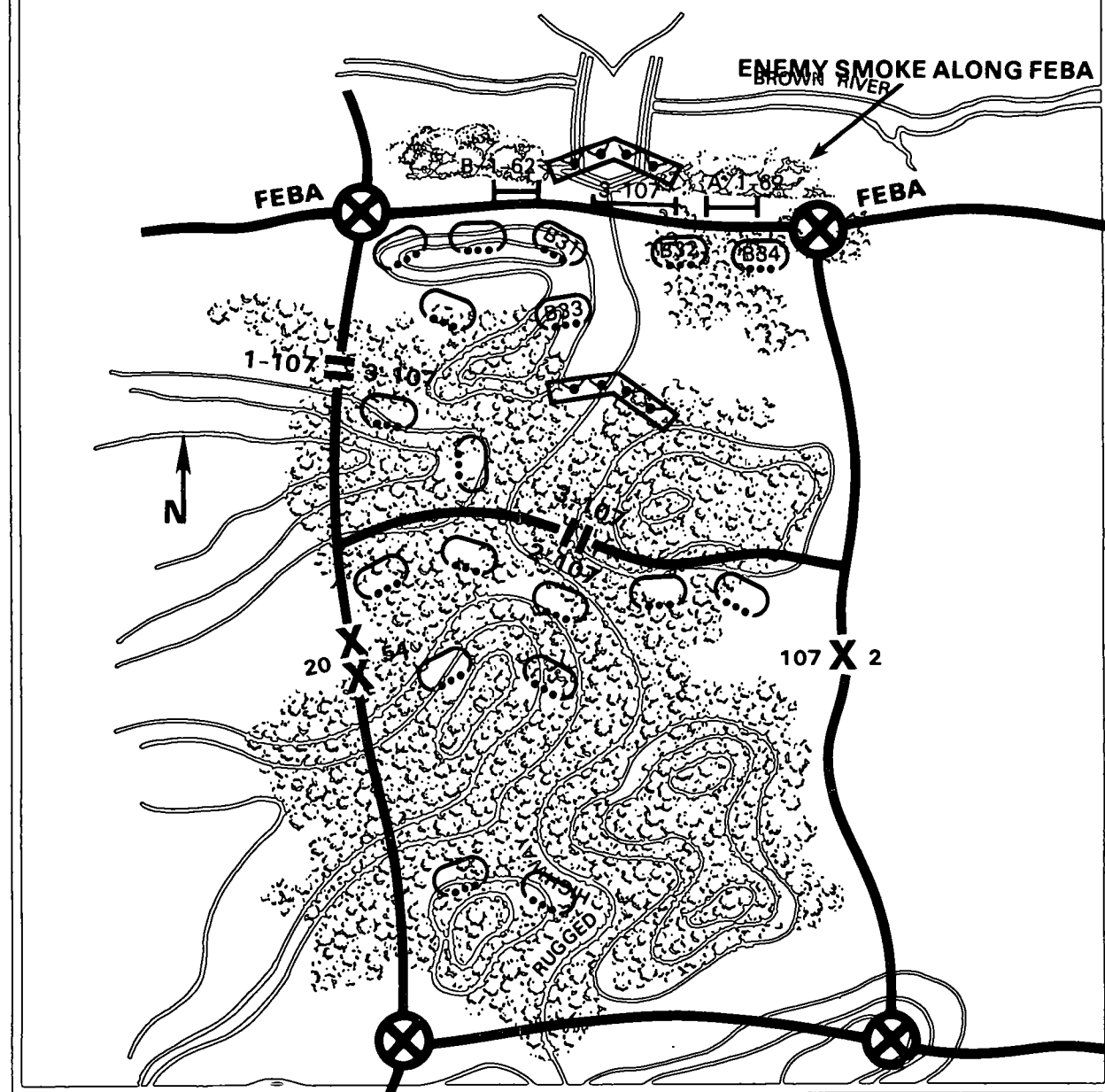
The battalion commander, at B33, observes a motorized battalion reinforced with tanks continuing along the same approach. He directs the two forward companies to fire at his command. He wants to have the enemy deploy in the vicinity of the large minefield 2,000 meters forward of the battle positions. He also requests a CAS strike on the following elements of the enemy

regiment. As the enemy deploys near the minefield, the combined massed fires of both companies together with suppressive FA and mortar fire cause the force to deploy, suffering heavy attrition. Approximately one-third of the enemy battalion regroups and continues the attack with increasingly heavy enemy artillery fires directed against 3-107 elements.



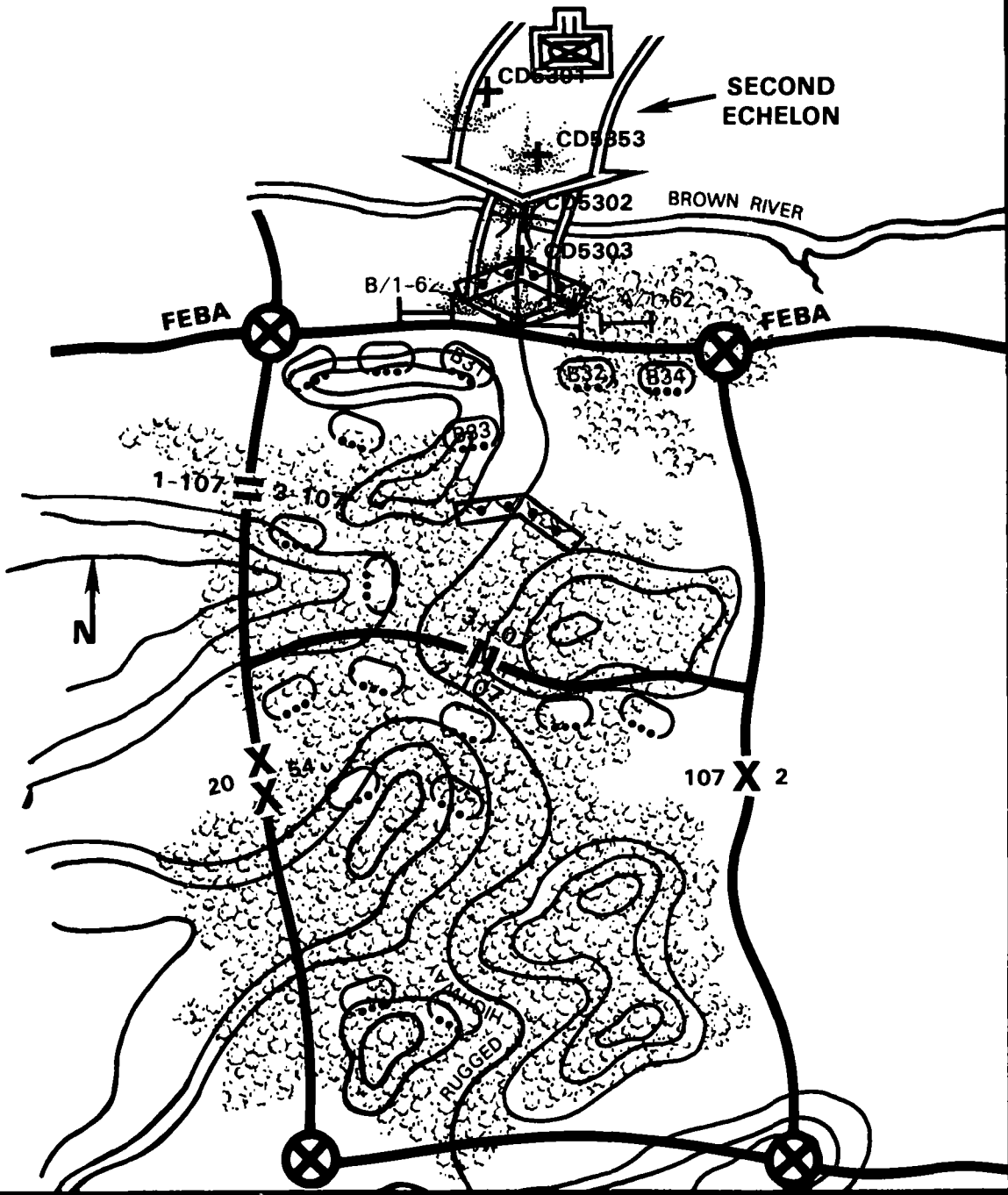
Enemy smoke along the FEBA obscures vision and gunners are unable to see targets clearly. About 15 vehicles approach within 300 meters along the road before they can be observed and engaged. Because of the ruggedness of the terrain and the steep incline of the defile along the road, enemy tanks can move only a few at a time down the road and are subsequently engaged by Dragon and LAW weapons deployed in depth. This causes the BMPs to seek cover and

concealment forward of 3-107 in order to dismount their infantry. As the infantry advances, they form assault lines firing their weapons on the move while the BMPs support over their heads or between squads with HE fires. The forward company commanders direct their riflemen, grenadiers, and machine-gunners to increase the intensity of their fires while the FIST chief engages the BMPs with indirect-fire weapons firing DPICM.



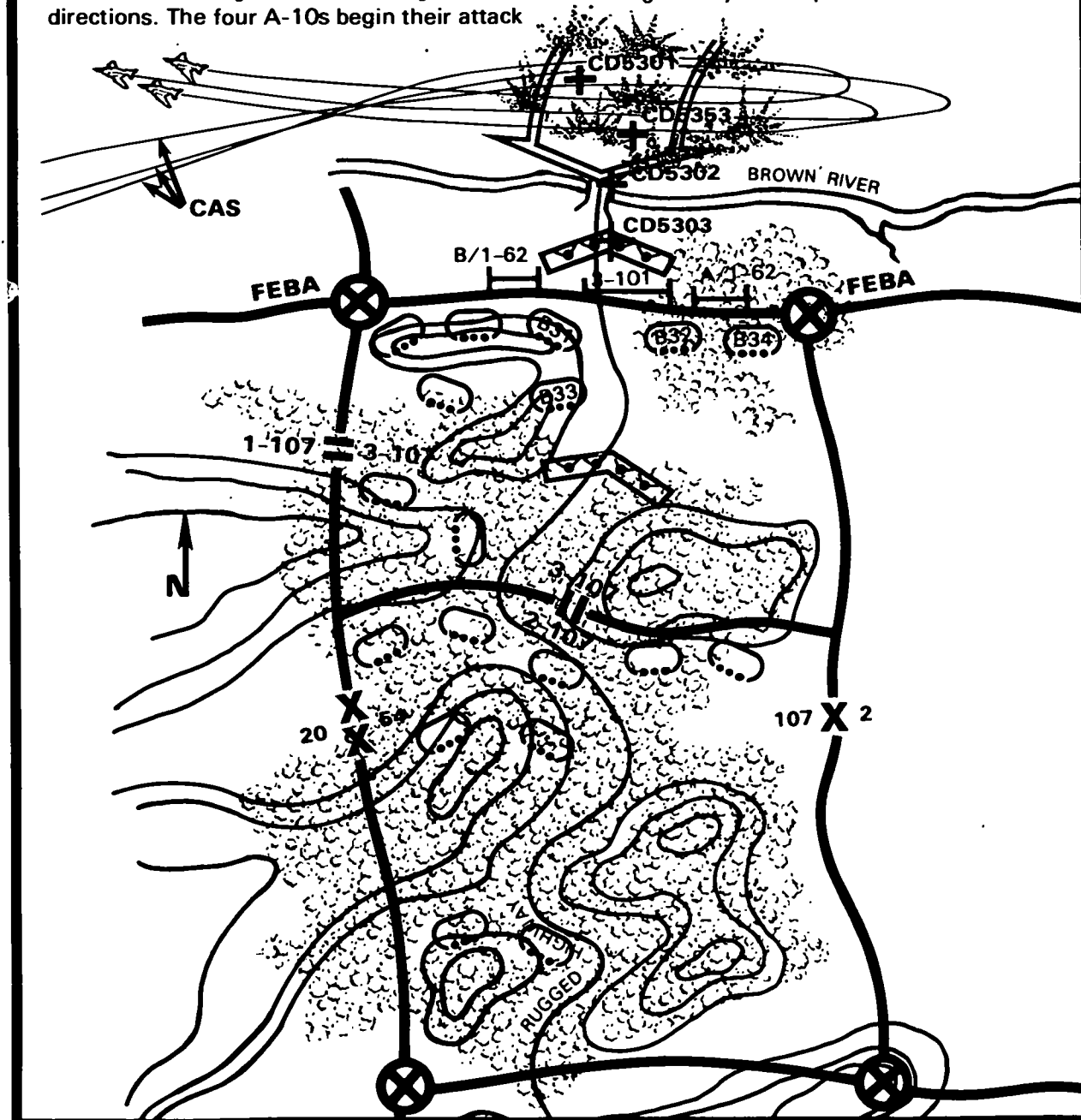
The assault, although slowed by small-arms and machinegun fire, has not been stopped, and the MRR commander has moved his second echelon closer to exploit the successes of the first echelon. The task force commander now fires pyrotechnic signals indicating that the final protective

fires are to be fired. At this, the machinegunners turn their guns on their final protective lines, grenadiers lay and fire on dead spaces in accordance with their range cards and the FSO and FIST chiefs call their FA and mortar assets to fire the final protective fires.



In the meantime, the CAS arrives on station. In the midst of the battle, because of obscurity, the ground FAC cannot see the target area from his position but the FIST chief with Company B can. He marks the target, the motorized rifle regiment second echelon battalion, with smoke and sends corrections through the ALO using cardinal directions. The four A-10s begin their attack

of the column. FA is adjusted and timed to strike in the target area to complement the dead space between aircraft runs to provide continuous fires on the enemy. These combined fires destroy the bulk of the column and the few remaining enemy begin withdrawing. Fires are adjusted on the fleeing enemy to complete their destruction.



**Situation 2. Light Infantry Battalion
Defense Against Infantry**

The 1st Battalion, 67th Infantry, as part of the 2d Brigade, 21st Infantry Division, is defending in sector against an enemy infantry force. The brigade has an FA battalion in direct support and 12 CAS sorties to support the defense. The battalion mission is to "defend to prevent an enemy crossing of BLUE River." The enemy can attack with an estimated infantry regiment. Tanks can reinforce the attack only if a bridgehead is secured. The terrain is broken and hilly with alternating wooded and open areas. Vehicular movement is restricted by steep slopes and heavy woods. The BLUE River is unfordable to vehicles. Without special equipment or some delay, infantry can cross only at HIGH SHOALS or RED FORD. After analyzing his mission, the situation, and the terrain, the battalion commander distributed his forces as shown here. He weighted the defense in the east with a narrow sector for Company B and gave Company B priority of fires. He also positioned his one platoon reserve in depth behind Companies B and A along the most dangerous avenue of approach. Engineers will assist units installing underwater wire and mines along the river in the battalion sector. Scouts, with remote sensors, will screen north of PL

BLACK; then, on order, screen the battalion left flank. The scouts will reinforce Company C if necessary.

The commander intends to stop the enemy forward of the FEBA (BLUE River) by engaging him when detected with long-range fires and preventing him from massing for an attack at any point along the FEBA. Careful and complete use of fire support is essential to this plan. He will use the reserve platoon to reinforce a threatened sector, or block, or counterattack any enemy success, as necessary. Movement of forces will be kept to the minimum. Whenever they must move, heavy smoke and HE-VT suppression of enemy locations will cover the movement. The commander must depend on a well-conceived plan of fires to provide the shifts in combat power that he needs.

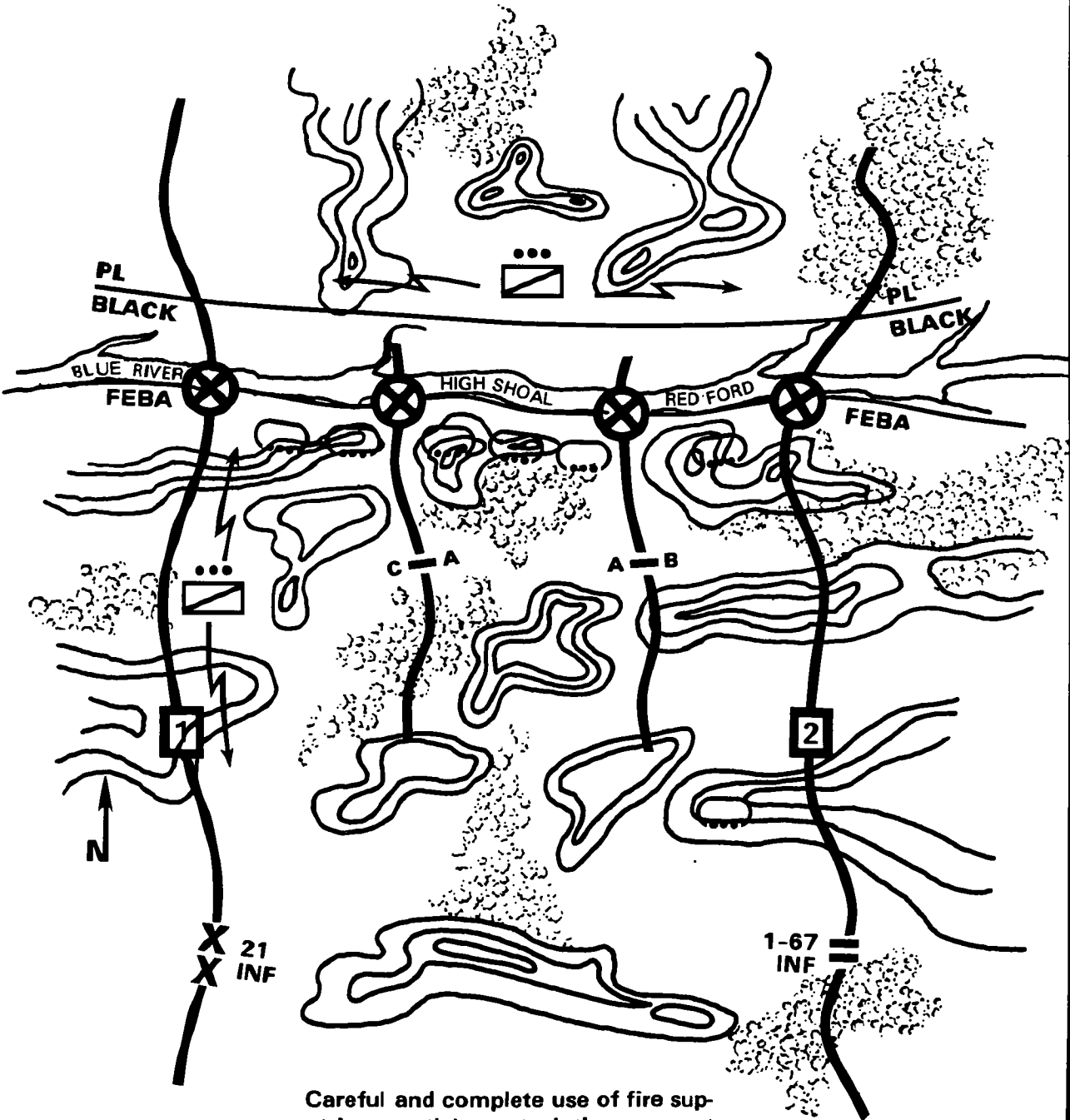
Fire support assets in this case include—

- company and battalion mortars,
- access to the fires of the brigade's DS 105-mm howitzer battalion and a GSR 155-mm battalion, and
- priority for planning the 12 CAS sorties distributed to the brigade.

Major assets available to the battalion for this defense include:

1ST BN, 67TH INF

- 3 rifle companies (2 TOWs, 9 Dragons, and 3 81-mm mortars each)
- 1 combat support company (12 TOWs and 4 107-mm mortars)
- 1 engineer platoon (DS)
- Priority of fires from the 2d Brigade's DS FA battalion



Careful and complete use of fire support is essential to attack the enemy at long range, prevent him from massing for an attack, and stop his forces forward of the FEBA.

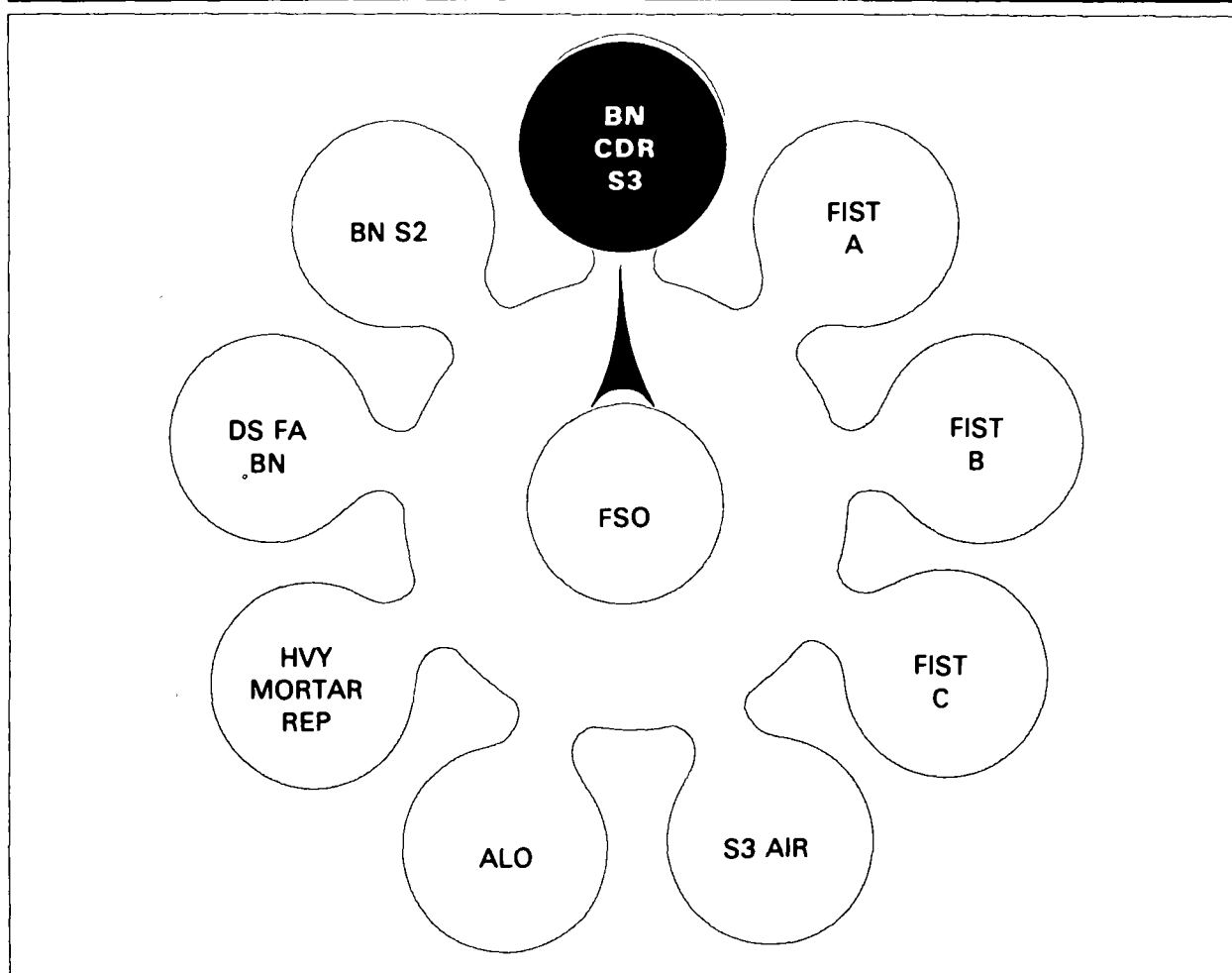
FSCOORD Activities. The 1-67th battalion FSCOORD is the FSO from the brigade's DS FA battalion (fig 5-18).

Although the FSO's role as FSCOORD of an infantry battalion defending against an enemy infantry unit is similar to his role in a mechanized enemy defensive environment, there are some important differences. He is less concerned, for example, with the roles of slowing and buttoning up armored vehicles and with augmenting the long-range fires of antitank weapons. He is more concerned with integrating close-in fires with automatic weapons coverage and with planning massed

fires to destroy concentrations of dismounted troops. At battalion level, the fire support tasks include—

- providing close support to companies,
- fires to attack massed targets acquired by battalion sources (OPs and scouts)
- fires to support any battalion counterattack, and
- fires to support disengagement and withdrawal.

FIGURE 5-18. FSCOORD CONTACTS.



In this case, brigade has planned fires beyond the battalion sectors—concentrating on likely assembly areas, avenues of approach, and on targeting input from all sources of intelligence.

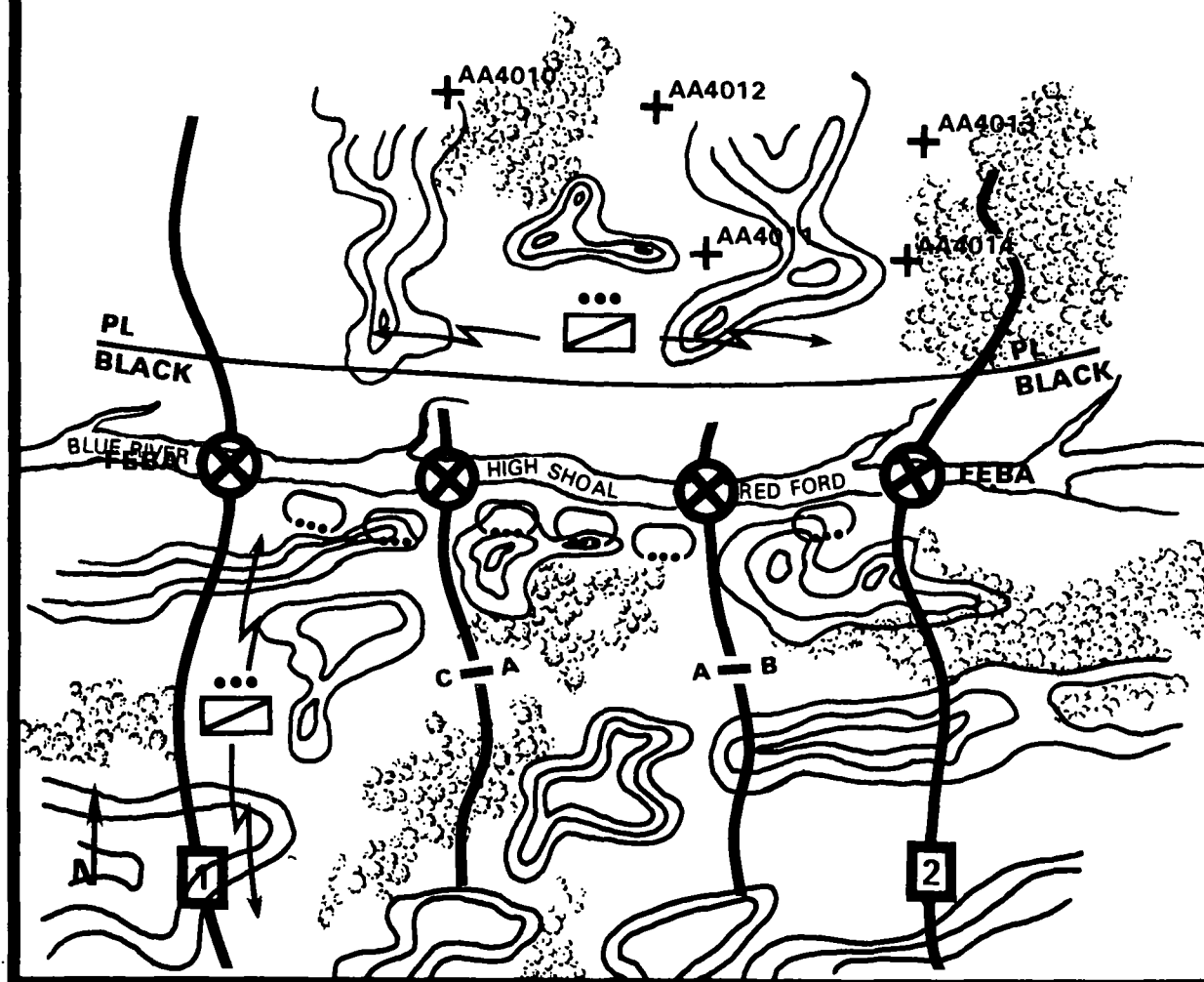
The 1-67th Battalion FSO must coordinate with the battalion S2 to insure that the best possible fire support is given to the scout platoon and that targeting information from the scout platoon, and any other battalion source, is rapidly reported to the battalion FSE for attack as appropriate.

The battalion FSO then planned fires on those targets that the battalion commander considered critical to the battalion's mission.

These included FA and CAS targets planned on critical avenues of approach; i.e., HIGH SHOALS and RED FORD and FA positions north of the BLUE River.

The battalion FSO then met the FIST chiefs in Companies A and B to coordinate the fires that had been planned in the key HIGH SHOALS and RED FORD areas.

Fires are planned *well beyond battalion sectors* to engage the enemy with long-range fires and prevent massing for an attack. At the same time, the plan of fires *must be flexible* enough to provide the commander with the shifts in combat power he will need as the battle develops.



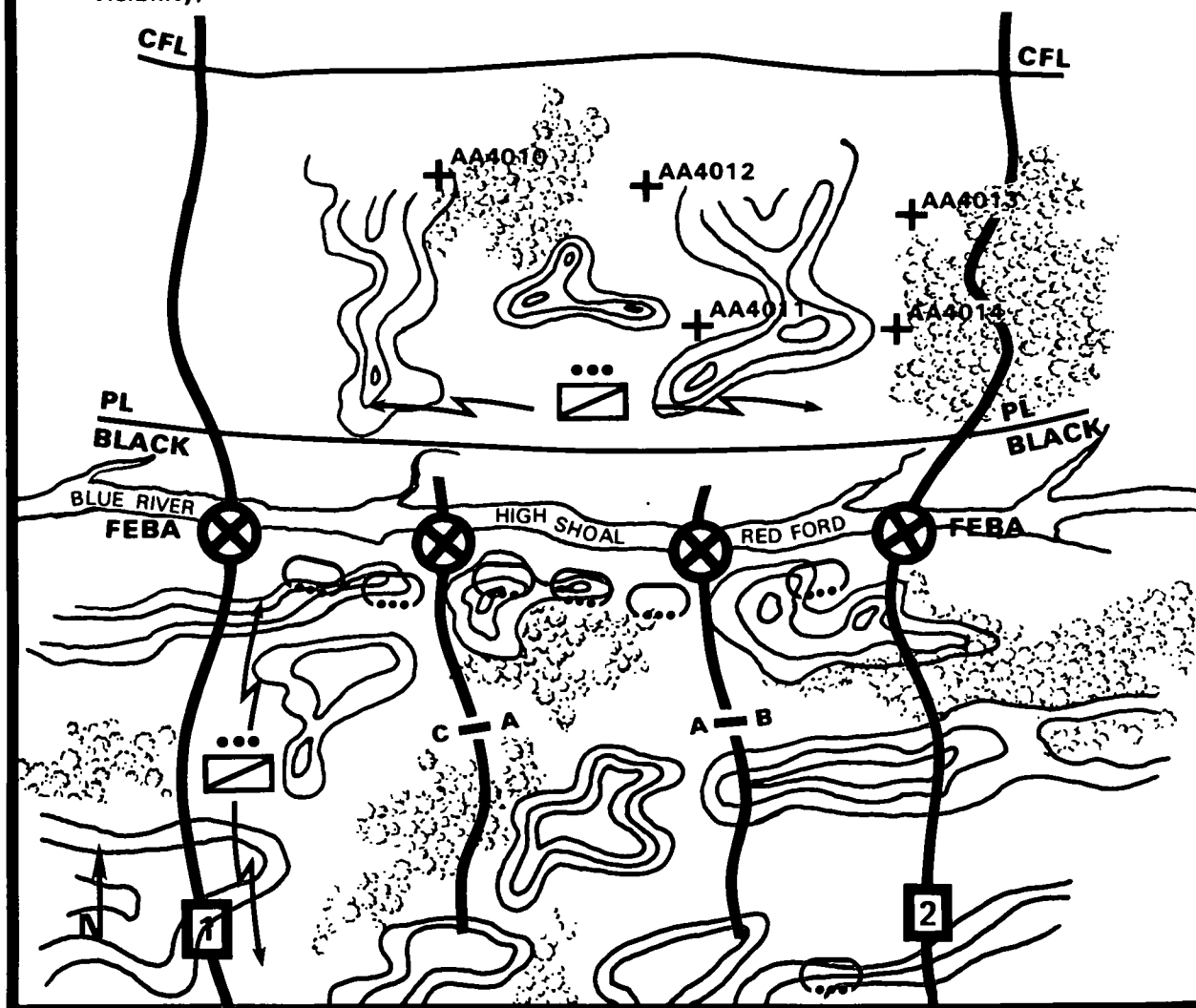
He then coordinated with the ALO to work out plans for response time, target marking, preferred ordnance, and troop safety for use of CAS against massed assault troops along avenues of approach into Companies B, A, and C and against possible crossings at HIGH SHOALS and RED FORD.

FISTs developed plans for the defense of their positions. These include—

- **coordinated fires on avenues of approach out to the limit of their unit's automatic weapons;**
- **longer range fires out to the limit of visibility;**

- **defensive fires (to include FPFs when allocated) immediately in front of their positions; and**
- **fires to cover withdrawing/repositioning of platoons.**

The FSO recommends to the battalion commander that the coordinated fire line in the battalion sector be placed out 2 kilometers beyond PL BLACK while the scouts are north of the BLUE River, and that it be brought to the vicinity of PL BLACK after the scouts withdraw.



Specific fire support tasks to support the infantry battalion defense against an enemy infantry unit orient on:

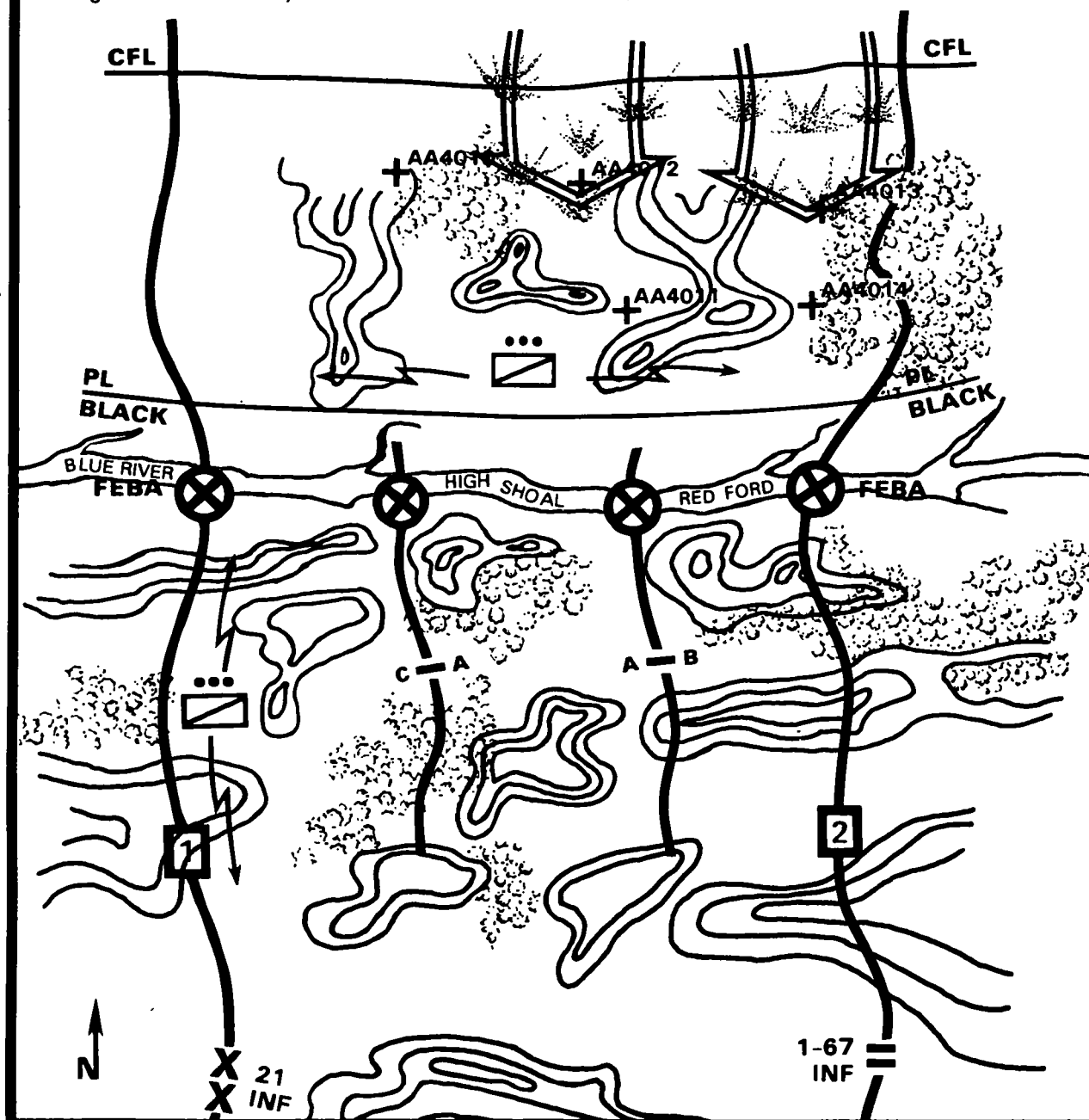
- ❑ responsive, close support to the companies
- ❑ fires to support disengaging and withdrawing
- ❑ counterfire
- ❑ integration of close-in fires with infantry direct-fire weapon coverage
- ❑ massed fires to destroy enemy troop concentrations, and
- ❑ fires to support battalion counterattacks.

Priority of fire support is shifted at the critical time to the most critical area in the battalion defensive sector. A heavy volume of coordinated mortar and FA fire is required to:

- ❑ seal off the enemy foothold,
- ❑ destroy his pinned-down troops, and
- ❑ support the counterattack to destroy the remaining enemy.

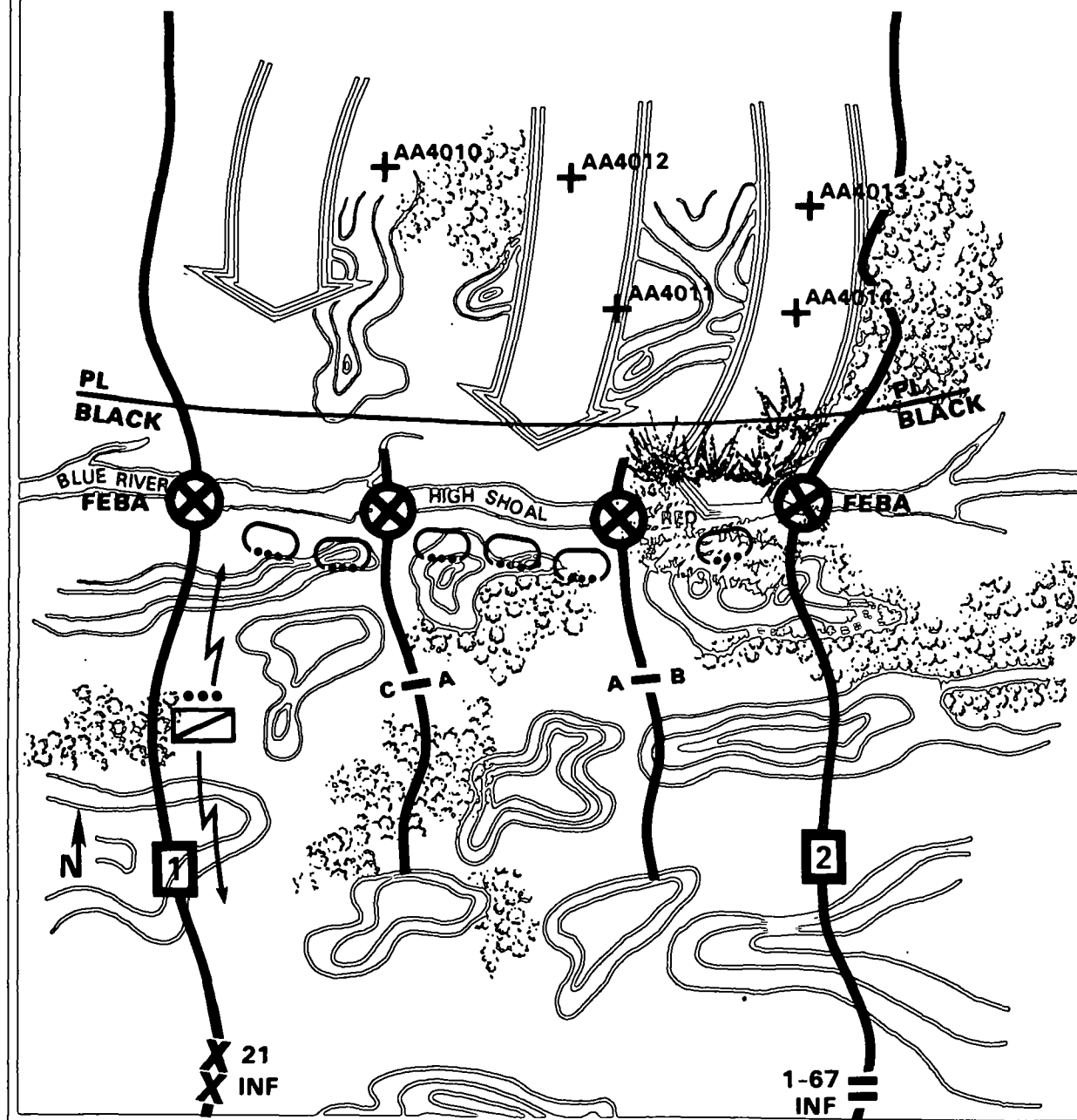
Sensors put out by the scout elements detect the enemy approaching on the right flank toward Company B at a range of 1,200 meters from PL BLACK. The scout element calls for FA HE-VT fires on the sensor reading site. Enemy movement continues and Company B calls for additional fires on targets detected by sensors and visual

observation in its sector. Other enemy movement is detected north of Company A where scout elements call for battalion mortar fire. The battalion commander orders the scouts to withdraw. The battalion FSO then requests fires from battalion mortars and continues FA fires to cover their withdrawal.



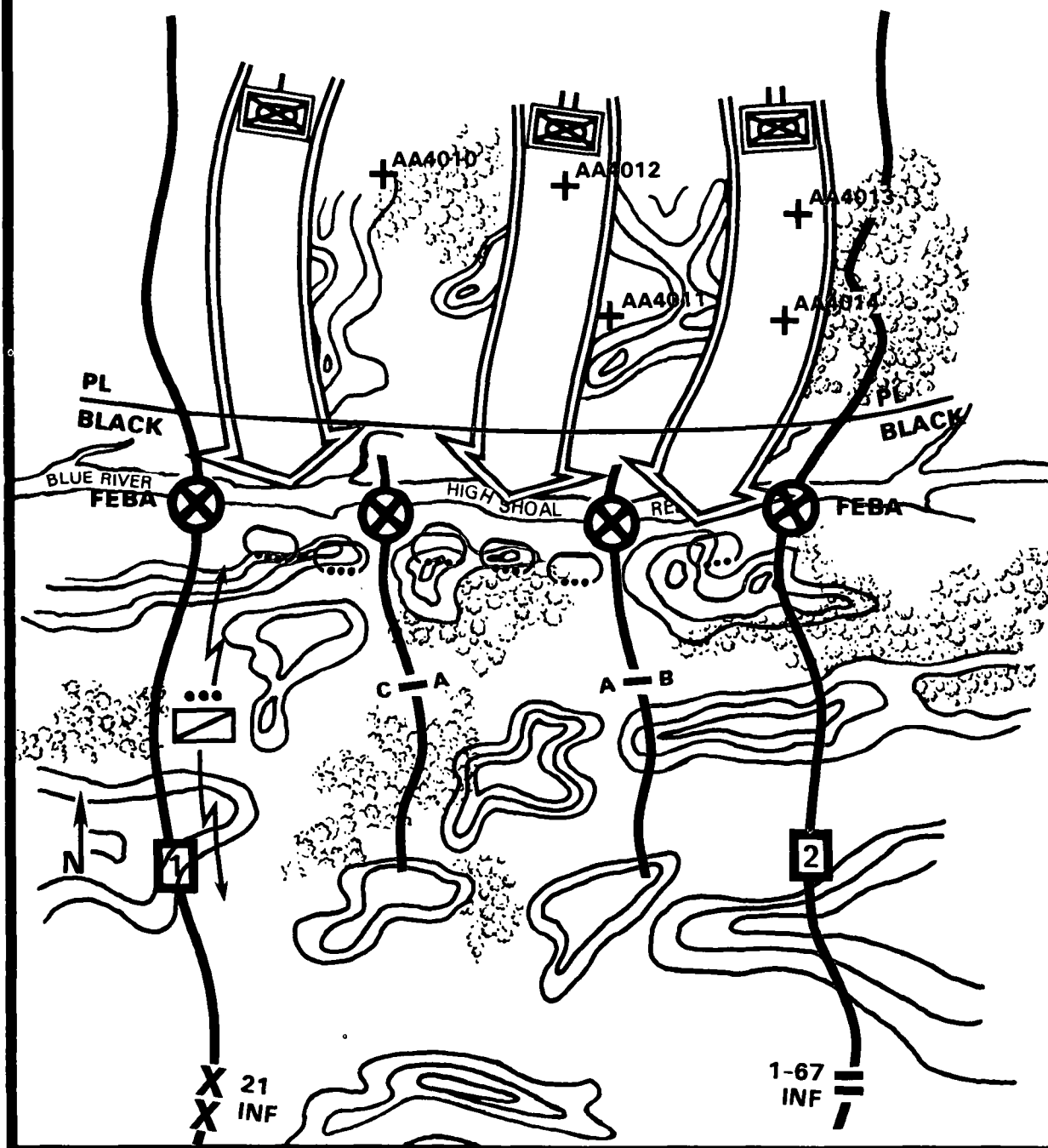
The enemy smokes RED FORD and the hill occupied by Company B. Company B FIST chief requests counterfire through the DS battalion FDC. Enemy elements continue to move under smoke cover and begin a hasty crossing of BLUE River in small inflatable boats. Company B engages visible enemy elements with small arms, machineguns, and LAWS. The 1st Platoon FO adjusts

company mortars on the enemy in the river and the 2d Platoon FO adjusts battalion mortars on the far bank. Company B FIST chief requests an FA battalion mass mission on enemy follow-on elements in the vicinity of PL BLACK. The battalion three volley APICM fire lands in 3 minutes. These fires and the combined fires of mortars and direct-fire weapons repulse the enemy attack.



Enemy indirect fires increase significantly as he prepares to make a major attack. Enemy suppression is effective and prevents observation from many Company A and Company B positions. Counterfire is requested by Company A and Company B

FIST chiefs. The enemy begins attacking on a broad front with about a battalion facing Company B, a battalion facing Company A, and a company-sized element in front of Company C.

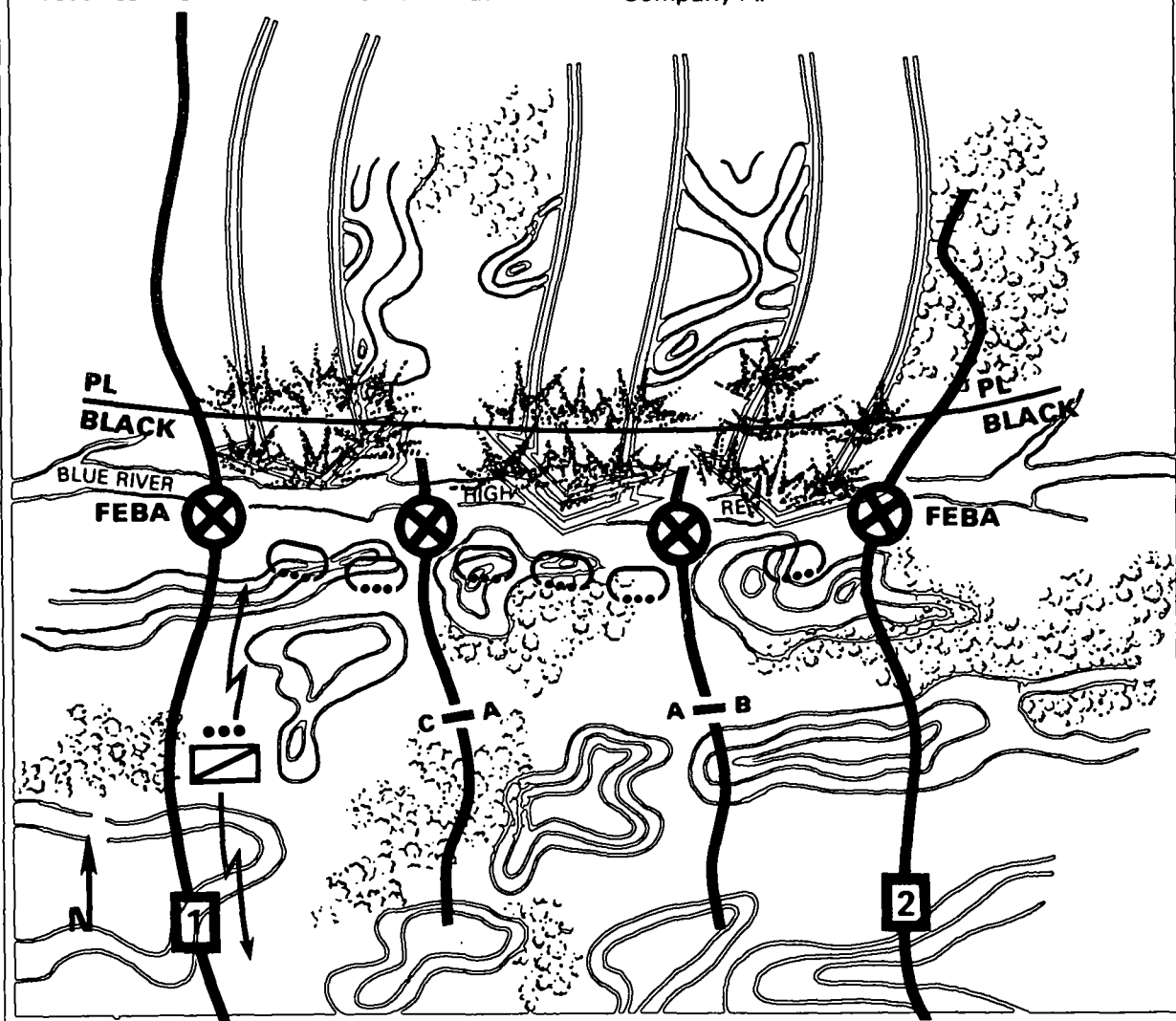


Company B FIST chief requests FA APICM on enemy forces on the far bank while two platoon FOs call for battalion and company mortars, respectively. These fires combined with machineguns and LAWs disrupt and finally stop the enemy attack. Many rafts and boats in this and the other sectors are destroyed by mines or are hung up on wire and destroyed by direct fire and HE-VT.

Companies A and C have been using their company mortars on forces in the river and on the edge of the far bank. Company A FIST chief calls for FA HE-VT on a larger enemy element approaching the far river bank. He receives this fire from the GSR FA battalion.

The DS battalion is currently finishing the Company B massed fire mission. During this time, Company C has been able to drive back the attempted crossing in its sector with rapidly shifting company mortar fire and direct-fire weapons.

Despite the heavier fires placed on the enemy in Company A sector, the attack continues and additional enemy forces are committed in that area. The enemy finally gets a reinforced platoon across the river and attempts to bring crew served weapons across. The battalion commander directs a shift of priority of fires from Company B to Company A.

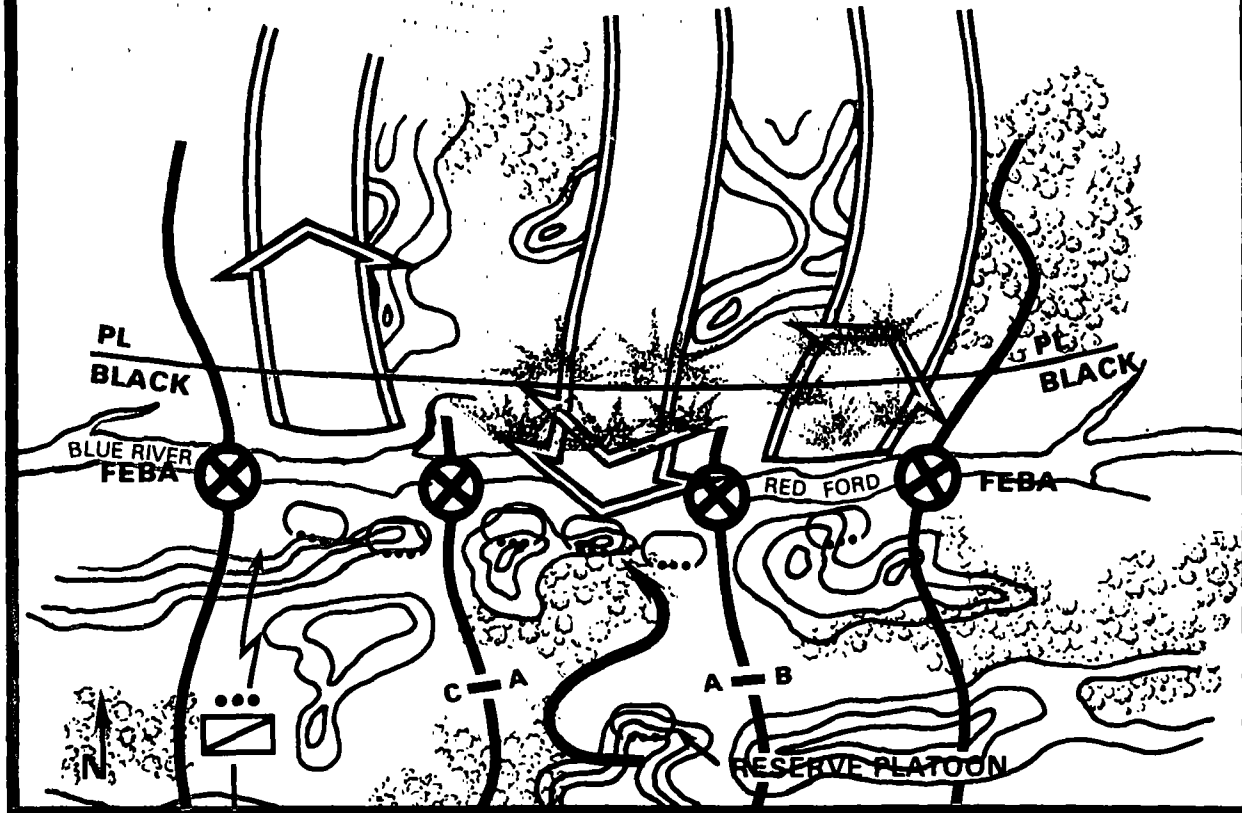


Reinforcements attempting to cross in Company A sector are repulsed as massed FA APICM and battalion mortars and direct-fire weapons are concentrated on the crossing site. Company A's FIST chief requests the battalion FSO to arrange for mortar fires from Company C on the far bank on the left of Company A's sector. He also requests that Company B's mortars fire on the right of Company A's sector to completely seal off the enemy attack. Company C mortars respond, but Company B mortars are shooting at dispersed elements withdrawing north from Company B. When they finish this mission, they will fire to assist Company A.

Company A's commander reports that he has the enemy platoon on the near bank pinned down but does not have enough forces to dislodge him. The battalion commander attaches the reserve platoon to

Company A to counterattack to destroy the enemy force south of the river. As the reserve platoon moves by a covered and concealed route to join Company A (in the vicinity of the righthand Company A platoon), the Company A FIST chief adjusts the FA battalion's APICM fires on the enemy foothold while battalion and Company A mortars are firing on the flanks.

The reserve platoon arrives at its attack position near the right platoon of Company A. Just before they move to attack west, the FA battalion mass mission lands on the enemy position. The combined fires of Company A and indirect fires destroy most of the enemy force. Fires are shifted just to the west and north of the reserve platoon as they counterattack. The reserve platoon sweeps across the area and destroys the few remaining enemy.



5-9. How to Support Other Defensive Operations

□ Characteristics of Delay and Withdrawal Operations

Delay. In a delay, a force under pressure trades space, or possibly combat losses, for time. *Time is usually best gained when maximum casualties are inflicted on the enemy.* The normal concept of the delay is to force the enemy to concentrate his forces and form for an attack again and again. Just when the enemy achieves this concentration, friendly forces pull back causing the enemy to regroup into march column if he is to maintain the required speed of his advance. Because smaller elements of a delaying force defend—suffering combat losses—the *delay is the most demanding of all ground combat operations.* If the enemy is stronger and time is available, the division will probably establish a covering force. Otherwise, brigades will conduct delays in their own sectors.

Withdrawal. A withdrawal is conducted to disengage a force from the enemy. A battalion may conduct a withdrawal as part of a larger operation to concentrate in another area. It may do so when fighting the active defense to increase the distance between itself and the enemy to take advantage of long-range weapons. *Disengagement is difficult, timing is critical, and careful planning is essential.* Armored and mechanized units may break away rapidly, but less mobile units usually rely on deception, obstacles, indirect fire, or clever use of terrain to make a clean break.

A withdrawal without enemy pressure depends upon surprise. It is often conducted during periods of reduced visibility and is supported by a deception plan. Plans also must be developed to conduct the operation under pressure in case surprise is lost. A force conducting a withdrawal without enemy pressure usually will leave an overwatch force in position. The mission of the

overwatch force is to provide security for the withdrawing unit, and to deceive the enemy by simulating normal fires, radio traffic, and other activities. The FA will also leave approximately one-third of their forces to provide fire support to the overwatch force. If possible, the units should be of representative calibers to assist with the deception plan.

In a withdrawal under pressure, a force must fight to disengage. Maneuver forces normally will leave a tank-heavy or overwatch or covering force in position to support the disengagement of the main body and maintain a mobility advantage over the enemy. The main body disengages to the rear using fire and maneuver until it is no longer hampered by enemy fires. It then moves quickly to its next position or assembles for movement out of the area. The covering force then disengages on its own and joins the main body.

The FA must provide all possible support to assist maneuver forces in disengaging and to discourage the enemy from pursuing. As appropriate, the FA will displace by echelon. However, *timing is critical to insure the maximum number of units can provide support*, but at the same time, avoid being overrun. Once disengagement is complete, general support artillery is displaced before the maneuver units withdraw. DS and reinforcing artillery displace at the last possible minute. Control of displacement may be delegated to lower echelon artillery commanders to facilitate precise timing and coordination. In the event of failure to disengage, artillery will support limited counterattacks and tank sweeps with all available fires.

Fire Support Organization. Assigned frontages in the withdrawal are usually wide, and additional FA is required to provide area coverage. Maneuver forces are usually highly mobile, so FA must be as mobile as the supported force. FA units of varying calibers, representative of the force as a whole, are desirable in order to deceive the enemy.

FA can be organized in several different ways. In a division-controlled covering force, FA can be provided by—

- ☐ an FA brigade attached or placed in direct support,
- ☐ available organic and nondivisional FA under control of a division artillery forward CP, or
- ☐ an FA battalion group.

If a brigade of the division conducts delay or withdrawal operations in its own sector or battle area, FA is provided by the brigade's habitual DS battalion and as much reinforcing FA as possible. The FA battalion normally DS to the brigade could be placed in direct support of a battalion task force conducting a delay or withdrawal for the brigade.

When command control is hampered by distance or terrain, FA may be attached to maneuver units conducting delay or withdrawal operations.

Close Air Support. Close air support is especially useful in delay or withdrawal operations; however, additional TACAIR may be required to drive off enemy air. Tasks assigned to CAS assets include—

- ☐ support of the deception plan,
- ☐ harassing and interdiction,
- ☐ interdiction of reinforcement routes,
- ☐ close support of units in contact,
- ☐ planning fires to facilitate disengagement if necessary, and
- ☐ covering obstacles and barriers.

☐ How to Support Delaying Operations

Fire support must be organized to provide effective support to maneuver units yet retain mass fire capability at division level. *FA and*

CAS are primary fire support means. Fires must be provided continuously as forces move to the rear. FA units echelon in depth and displace by echelon. Fire support planning and coordination is similar to that conducted for delaying operations in the defense.

Fire support tasks include the following:

- ☐ Attack advancing forces as deep and as early as possible to force deployment.
- ☐ Delay and degrade the effectiveness of tanks.
- ☐ Cover obstacles, barriers, gaps, and flanks.
- ☐ Suppress/destroy forces in overwatch positions.
- ☐ Suppress direct-fire gunners.
- ☐ Facilitate disengagement.
- ☐ Support counterattacks.
- ☐ Provide counterfire.
- ☐ Suppress enemy air defense.
- ☐ Illuminate the battlefield.

☐ How to Support a Withdrawal Without Enemy Pressure

FA and mortars of representative calibers remain in place to cover the withdrawal. If practical, the normal pattern of fires is maintained to enhance deception and cover the noise of displacing vehicles. Detailed fire plans are prepared to deceive the enemy and frustrate his attempts to interfere with withdrawal. Close coordination is required between fire support elements remaining with units in contact and fire support elements with those units withdrawing.

Fire support tasks include the following:

- ☐ attacking breakthrough concentrations,
- ☐ destroying concentrations at choke-points and assembly areas,
- ☐ assisting in disengagement,
- ☐ providing counterfires, and
- ☐ providing suppression of enemy air defenses.

☐ How to Support a Withdrawal Under Pressure

Fire support is directed primarily toward assisting in the disengagement, discouraging the enemy from pursuing and screening friendly routes of movement. Once disengagement is complete, GS field artillery displaces before maneuver units withdraw. DS FA remains in position until the last possible moment.

Fire support tasks include the following:

- ☐ mass fires to assist in disengagement,
- ☐ support counterattacks,
- ☐ suppress enemy direct-fire weapons,
- ☐ cover obstacles and barriers, and
- ☐ provide counterfire.

☐ Rearward Passage of Lines

During movements to the rear, a force may withdraw or delay through a unit occupying a rearward defensive or covering position. Such an operation requires considerable prearrangement and coordination with the forces manning the rearward positions

concerning movement and fires. Fire plans are prepared and communication channels are established to permit the rear guards of the withdrawing force to receive fire support from the stationary force during the critical phases of the withdrawal.

Liaison and communications are established at each fire support echelon between the FSCOORDs of the withdrawing force and the appropriate FSCOORDs of the unit in the supporting rearward position. These channels are used to exchange information and plans and to transmit requests for fire. The FSCOORDs of the withdrawing force normally will effect communications with the FSCOORD's supporting the main defensive position by using the latter's command/fire direction net (FM). FOs with the withdrawing force may be directed to transmit requests for fire directly to an FDC of an FA battalion supporting the main defensive position.

As the rear security elements of a withdrawing force come within range of indirect-fire units of the stationary force, the fires of the stationary force weapons augment the fires of the withdrawing force.

The withdrawal of FA columns through a stationary position is scheduled and coordinated by the supported maneuver force.

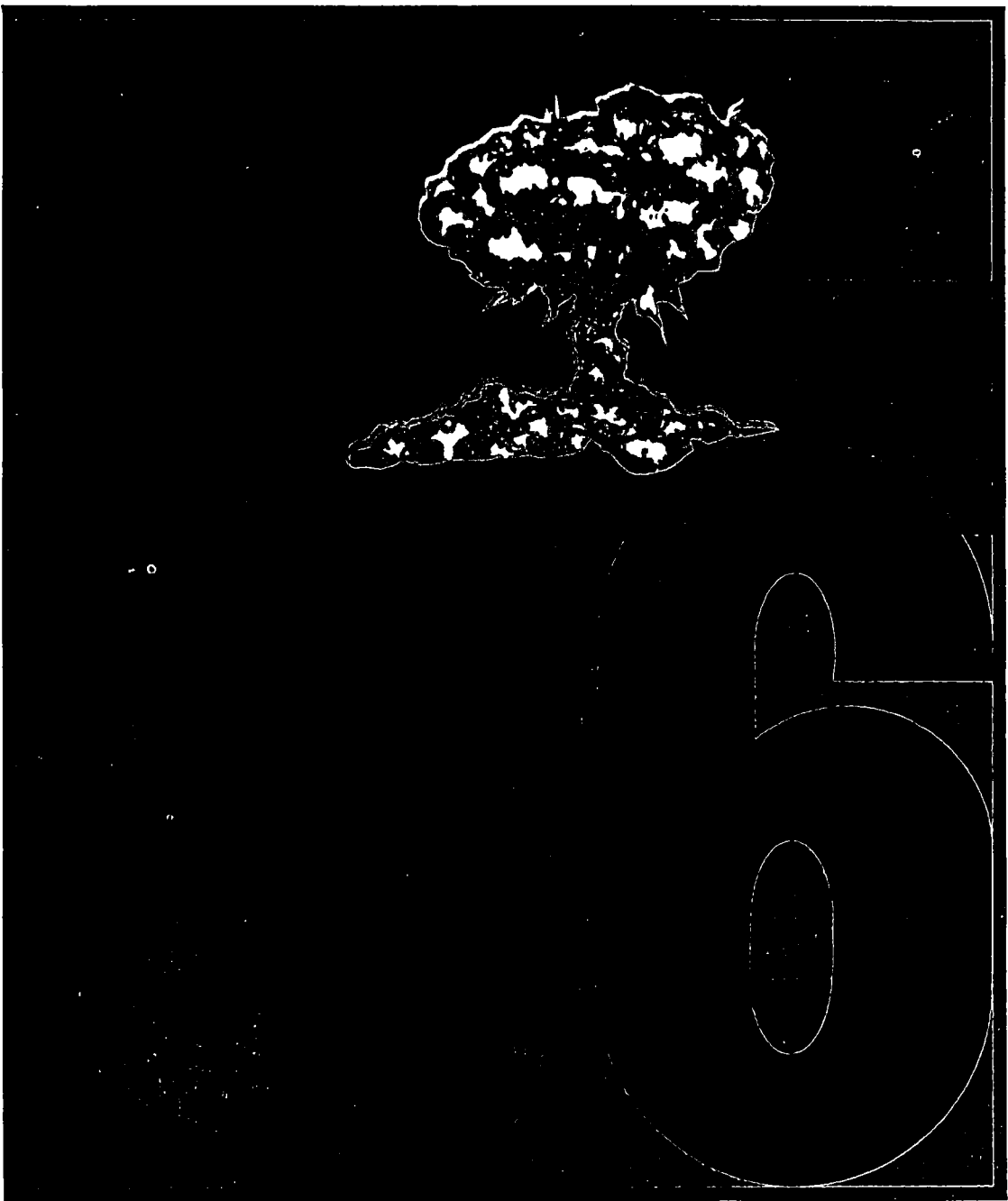
The responsibility for fire support coordination within the zone remains with the FSCOORD of the withdrawing force until control of the sector or battle area passes from the withdrawing force to the commander of the stationary force.

5-10. Summary

The concepts and fundamentals for various defensive operations and how fire support is integrated into the operations have been discussed. *The key to winning the defensive battle is to get maximum effects from all fire*

support available and fight the defense with an offensive spirit. If the commander cannot successfully defend with fire and maneuver,

he may be forced to use more powerful weapons. This is the subject of the next chapter—nuclear and chemical operations.



Nuclear & Chemical Fire Support

The blow, wherever struck, must, to be successful, be sudden and heavy.

— General Robert E. Lee

WHY

- Nuclear and chemical weapons can quickly and decisively alter combat force ratios to change the course of battle.

Knowing what these weapons will do and how they are planned, coordinated, and integrated with maneuver and nonnuclear fire support is essential.

WHAT

- This chapter tells you:
 - why and when nuclear and chemical weapons are employed on the battlefield,
 - who makes the decision to use them,
 - what the weapons do for the commander,
 - who plans and coordinates their use, and
 - how the weapons are used.

The planning and coordination required for nuclear and chemical employment use the same basic fire support principles as nonnuclear fires. However, National authority limits the number of weapons as well as when and where they will be fired. This situation places significant demands on the commander and his FSCOORD. The pace of battle and the tactical situation that will exist when nuclear or chemical fires are requested will be demanding and difficult.

6-1. Introduction to Nuclear Weapons Use

□ Tactical Nuclear Doctrine

US Army tactical nuclear doctrine describes the methodology for employment of nuclear weapons on the battlefield and for conducting operations in a nuclear conflict. For the purposes of this chapter, tactical employment means the use of nuclear weapons by the battlefield commander—usually at corps or below—in support of maneuver forces in his command.

Because nuclear weapons represent combat power of tremendous magnitude, the initial use of nuclear weapons will result in a significant change in the nature of any conflict. While tactical nuclear planning by the corps usually will be oriented toward the achievement of tactical goals, any employment of nuclear weapons will have a fundamentally political aspect of which planners at all echelons must be aware. Whether nuclear weapons should be used during a given conflict and the degree of their

use are strategic decisions that high level political/military authorities will make.

The Army's tactical nuclear doctrine specifies the manner in which corps and divisions will conduct nuclear operations within political and military constraints. Such constraints may include geographical or political boundaries, yield limitations, time, number of weapons to be used, collateral damage preclusion guidance, and restrictions on using specific delivery systems or attacking specific types of targets.

□ Nuclear Weapons Employment Planning

The corps nuclear weapons "package" is a basic planning and control element of US Army tactical nuclear doctrine. A package is a *discrete grouping* of nuclear weapons for employment in a *specified area* during a *short time period* to support a corps tactical mission. Packages should be planned prior to hostilities and refined during hostilities to obtain the best tactical effect. Aimpoints are planned outside civilian population centers in areas that we feel the enemy *must use* to accomplish his mission. To convey that nuclear weapons are being employed in a *limited* manner, all weapons in a package are fired in the shortest possible time. Division subpackages are subelements of a corps package and will be executed as part of a corps package. A single package or several packages may make up all or part of a more widespread theater or strategic employment plan.

Nuclear packages are planned using a combination of two nuclear target analysis techniques: *preclusion-oriented analysis* and *target-oriented analysis*. Preclusion-oriented analysis seeks to avoid excessive damage to population and facilities while employing yields that will give the greatest effect on the probable enemy locations within the remaining areas. Probable enemy locations are identified by considering the

terrain, enemy doctrine, and friendly operations. As more intelligence becomes available, aimpoints are *refined* to obtain the best tactical effect. Target-oriented analysis requires a known target location, size, and composition. Using this technique, weapon yields can be selected to achieve specific target coverage within use constraints.

Nuclear fire planning is a continuous process and is an integral part of all operations unless the commander specifically deletes the requirement. The objective in employing nuclear weapons is to *decisively alter* the tactical situation. Nuclear weapons employment may be necessary:

- Offensively, to destroy enemy forces or regain lost territory.
- Defensively, when the mission cannot be accomplished without them.
- In response to enemy first use.

Nuclear weapons alone probably will not be decisive on the battlefield despite their lethality. Nonnuclear firepower and maneuver must be integrated with nuclear firepower to achieve decisive results. For example, enemy forces may use "hugging" tactics that put their units in proximity to towns where they believe we are unlikely to use nuclear weapons. Nonnuclear fires—used in conjunction with nuclear fires—must be planned in such areas.

Offensive use of nuclear weapons can be anticipated to destroy enemy forces or to allow the corps commander to take the offense and regain lost territory.

In the defense, we may attack first and second echelon committed divisions and their fire support systems. The enemy tactic of echelonment can be defeated by destroying followup forces for the breakthrough and by weakening support. Commanders must be prepared to take advantage of nuclear effects with aggressive maneuver and coordinated fires.

NUCLEAR APPLICATION FOR THE OFFENSE AND DEFENSE

OFFENSE

- Attack defensive positions.
- Attack fire support systems.
- Attack command, control, and supply installations.
- Prevent reinforcement of the defense.
- Counter counterattacks.
- Protect the flanks.
- Isolate selected terrain.

DEFENSE

- Attack committed frontline and breakthrough forces.
- Seal penetrations.
- Attack reserves.
- Attack second echelon forces.
- Counter counterattacks.
- Attack fire support systems.
- Deny enemy access to critical terrain or avenues of approach.
- Attack command and control and prestocked supplies.

APPLICATIONS FOR THE USE OF NUCLEAR WEAPONS THE OFFENSE AND DEFENSE ARE SHOWN ABOVE.

□ The Battlefield Decision—Who

All tactical levels within a theater are involved in nuclear fire planning. Corps is the focal point for planning the battlefield use of nuclear weapons and originating requests for authority to use nuclear weapons. The corps commander may request nuclear release when he concludes that:

- the corps cannot accomplish its mission if nuclear weapons are not used.
- if the corps accomplishes its mission without nuclear weapons, it would be too weak to continue nonnuclear operations.

The corps FSCOORD (corps artillery commander) is the corps commander's principal nuclear adviser and is responsible for planning and coordinating the corps nuclear package. To do this, he follows closely the flow of the nonnuclear battle so that the need to use nuclear weapons is recognized as early as possible. He carefully monitors the attrition of cannon delivery means and continually updates the corps commander on the status of those and other fire support assets. Execution of a corps package must occur before delivery means become too severely depleted.

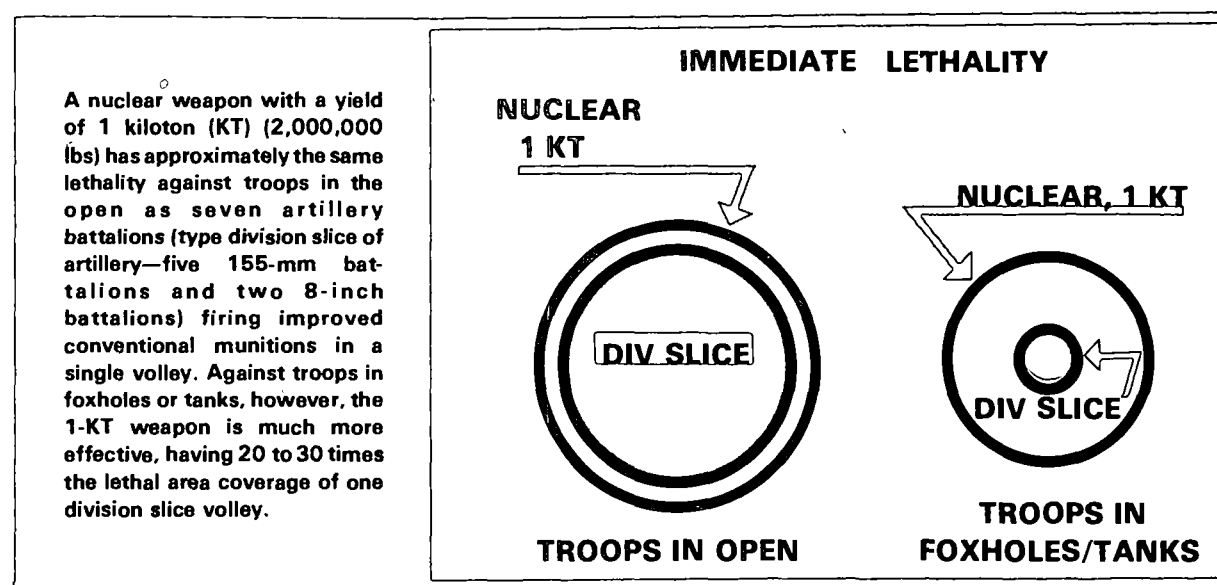
□ Controls on Nuclear Release

Release, or the authority to use nuclear weapons, will be granted by the National Command Authority (NCA). National command authorities are The President and The Secretary of Defense. To dampen the escalatory effects of using nuclear weapons, release normally will be approved for *preplanned packages* of weapons to be fired within a *specified time frame* and within *specified geographical areas*. To convey to the enemy that we are using nuclear weapons in a limited manner, all weapons in a package will be fired in the *shortest possible timespan*. Approval to employ nuclear weapons is granted after consideration of the predicted military effect, the strategic impact, and the overall political objectives.

6-2. What Nuclear Weapons Can Do

□ Nuclear Weapons Effects

Nuclear detonation effects present significantly increased destructiveness on the battlefield when compared to nonnuclear firepower. A comparison of a 1-KT nuclear weapon to a typical division slice of field artillery is shown below.



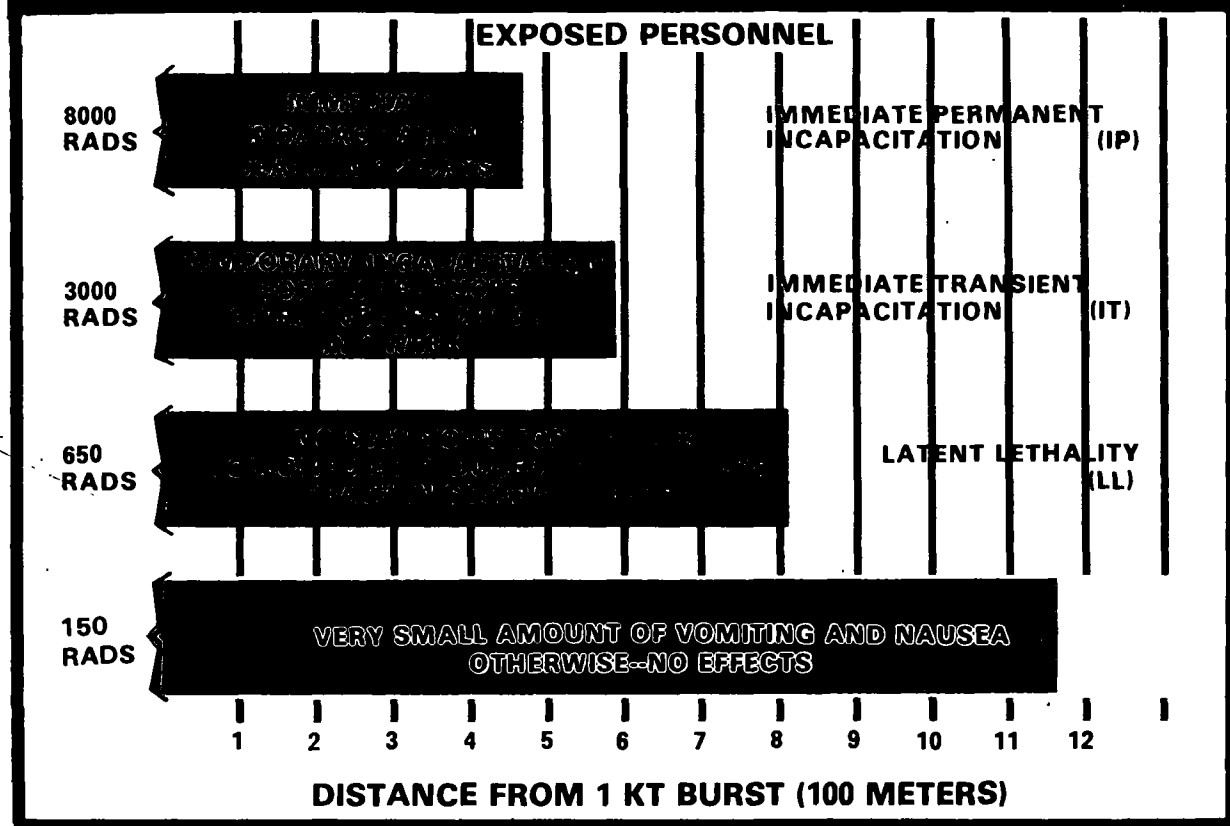
There are several distinct nuclear weapons effects. *Blast* effects are vastly increased over nonnuclear weapons effects. Both initial and residual *radiation* have a significant effect on troops. *Thermal* output is an added danger to unprotected soldiers. *Flash* can cause temporary or permanent blindness. The *electromagnetic pulse* that emanates from a nuclear burst can seriously impair command and control communications. Most casualties and damage on the nuclear battlefield are caused by some combination of these effects rather than a single one.

Blast. For a "typical" nuclear weapon, approximately 50 percent of its yield is produced as blast when detonated at a low burst height. Materiel targets are damaged

either by the crushing action or by the tumbling, tearing action of the blast wave. In addition, trees may be blown down and debris scattered about the battlefield creating obstacles to movement. Personnel may become casualties from high-speed winds.

Initial Nuclear Radiation. This radiation, which is emitted from the detonation during the first minute, is highly penetrating and may produce a lethal hazard several hundred meters from the nuclear burst. This type radiation normally is measured in terms of the "radiation absorbed dose" or "rad." Biological responses in the average person due to various radiation doses are shown in figure 6-1.

FIGURE 6-1. BIOLOGICAL RESPONSE TO RADIATION.



Residual Nuclear Radiation. This radiation consists of induced radiation and fallout. Induced radiation is caused by the initial neutron radiation interacting with the soil. It occurs in a relatively small circular area directly below the nuclear detonation. Normally, casualties can be avoided by restricting operations within a radius of 1 kilometer of a detonation until radiological survey teams have determined the actual radius of significant hazard. A surface or subsurface burst vaporizes large quantities of soil and forces it into the atmosphere. When sufficient cooling has occurred, "fallout" particles are distributed by the prevailing wind as they return to the ground. Because fallout contamination may cover large areas and present major operations problems, deliberate use of surface bursts is tightly controlled by higher authority.

Thermal Radiation. Thermal energy (heat and light) may travel in sufficient intensity to burn troops and start fires at considerable distances from the point of detonation. Terrain, vegetation, buildings, fog, haze, and smoke reduce the range of such effects.

The brilliant flash of a nuclear burst can cause "dazzle" (temporary blindness) or permanent retinal burns at ranges (up to 50 km at night) where all other casualty-producing effects are insignificant. All damage is done before the 0.15 second normally required to blink an eye. Facing away from the burst or closing the eyes will not always eliminate dazzle.

Electromagnetic Pulse (EMP). Electrical and electronic equipment, including radios, generators, night vision devices, and computers, may be damaged or temporarily disrupted from the EMP emitted by a detonation.

□ **Survival on the Nuclear Battlefield**

Despite their tremendous lethality, nuclear weapons may not be completely decisive against ground targets. Damage will be lessened by target location error, weapon system limitations, and defensive countermeasures. Three important countermeasures are shielding, dispersion, and EMP countermeasures.

Shielding. Shielding is physical protection that reduces the vulnerability of personnel and materiel to nuclear weapons effects. Normally, any form of shelter that increases protection against small arms, mortars, or nonnuclear artillery fires will increase the protection against the effects of a nuclear weapon. Terrain itself can provide protection.

Dispersion. Dispersion is the separating of units to reduce their vulnerability to nuclear attack. Well-dispersed units are less vulnerable because of the increased distance between elements of the unit. In addition, a well-dispersed unit is more difficult to detect. The extent of dispersion is a function of the mission, local security available, the enemy's target acquisition capabilities, and the likelihood of nuclear strikes.

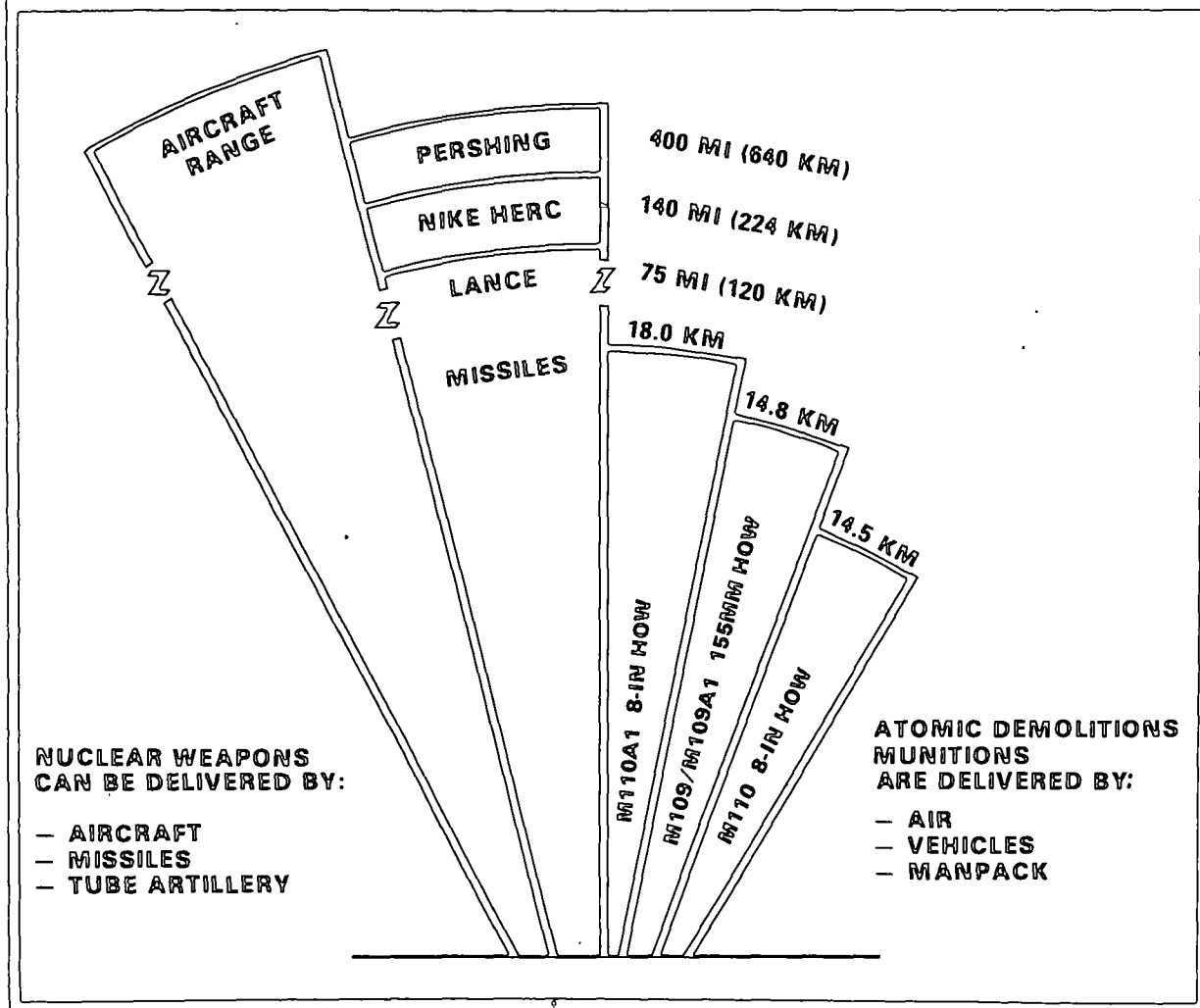
Electromagnetic Pulse Countermeasures. Protective measures can be taken that will reduce the probability of EMP damage to a piece of equipment. These include using larger antennas only when absolutely necessary, reduced remoting of radios, removal of antennas and cables when radios are nonoperational, and storage of nonoperational radios inside "buttoned-up" armored vehicles. Reducing EMP vulnerability also reduces the unit profile in electronic warfare (EW) operations. See FM 11-50, chapter 4, for a more explicit description.

□ Nuclear Delivery Systems

Nuclear weapons can be delivered by a variety of tactical delivery systems. Cannons are relatively accurate and permit a higher degree of flexibility because of the low yields available and short response times. They are most useful in support of forces in contact and where it is important to minimize collateral damage and insure troop safety. Cannons are more survivable because of large numbers

and wide dispersion. Missile systems are characterized by longer ranges, larger payloads, and slower response. Air-delivered weapons are characterized by very long ranges, maneuverability, and reduced effectiveness in bad weather. Atomic demolition munitions (ADM) can be useful for obstacle production; however, the need to bury them to optimize this effect is a disadvantage. Figure 6-2 shows nuclear-capable systems and representative ranges.

FIGURE 6-2. US TACTICAL NUCLEAR DELIVERY SYSTEMS.



□ **Enemy Force Nuclear Doctrine**

Warsaw Pact forces' nuclear doctrine includes the following factors:

- The decision to fire is made at the highest political levels. A decision to retaliate against first use by an enemy *may* be made by the theater commander.
- Surprise and massed nuclear fires in depth are stressed.
- Weapons with much larger yields than those employed by the US are used. Normally, they will be employed in airbursts.
- Units may be withdrawn to allow close support strikes. *This would be a good intelligence indicator for US forces.*
- Nuclear weapons are integrated with and supplement nonnuclear and chemical fires to achieve surprise massed fire support.
- Enemy nuclear delivery means are the first priority targets.

Forces we could fight in the Far East consider the following factors:

- Planning and decisionmaking are done at the General Staff Department in consultation with Army and higher headquarters.
- Employment will be in response to the first use of nuclear weapons by a threat force.
- Strategic missiles and bombs may be used to support ground forces. ADMs may also be used.
- Threat nuclear delivery means are the first priority targets.

6-3. Nuclear Weapons Packages and Subpackages

□ **The Nuclear Weapons Package**

A nuclear weapons package is the basic element of prehostility planning for nuclear battlefield support. A package is a *discrete grouping of nuclear weapons for employment*

in a specified area during a short time period to support a corps tactical mission. A package is characterized and defined by four parameters:

- A specified *number* of nuclear weapons, listed by yield or by yield and delivery systems.
- The purpose for which the package would be employed.
- A time for employment.
- An area for employment.

A package is given a "name" to identify and refer to a specific set of parameters. That package will then be treated as a single entity for the purpose of request and release. "Release," as it pertains to corps and lower echelons, is *approval to use a specific package of nuclear weapons subject to specific employment constraints.*

Number. The number of weapons in a corps package will depend upon the enemy, the mission, the terrain, and constraints imposed by higher echelons. A corps package should contain enough weapons to achieve a desired objective. At corps, the objective in using a package is usually to change the tactical situation decisively. Weapons are specified by a total number, listed by yield or by yield and delivery system. The total number of weapons is an *upper limit*. The corps commander may use fewer weapons and adjust yields within constraints if the tactical situation permits.

Time. To provide the control required by the National Command Authority and the flexibility needed at the tactical level, the time parameter is composed of two times:

- a fixed period of time expressed in hours—*time frame*.
- a movable period of time expressed in minutes—*timespan*.

A time frame is the time during which the corps anticipates employing nuclear weapons or the NCA has approved their use. The time frame is requested by the corps and approved or modified by the NCA. The corps

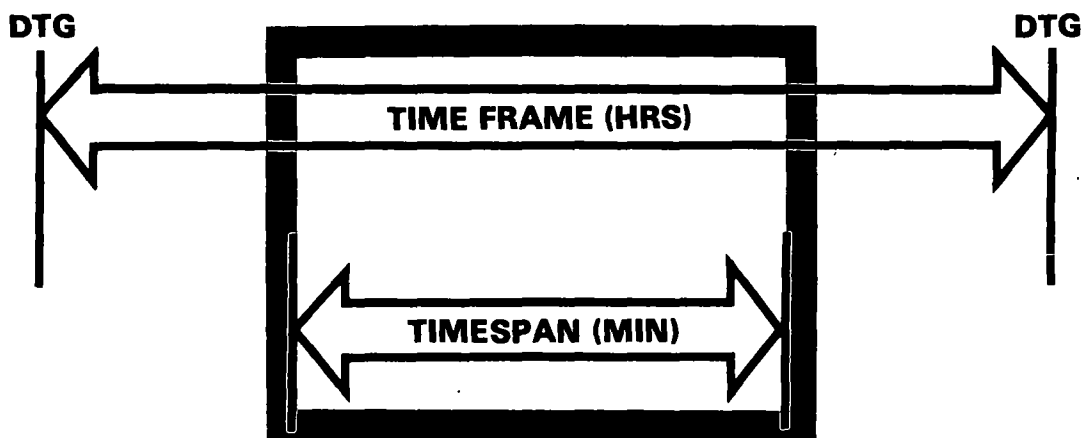
requests a time frame to cover the uncertainties in intelligence and in predicting the exact time that the best tactical advantage can be gained by use of the package. The time frame will be established by the NCA based on their estimation of changes in the strategic environment of the conflict. The time frame may be several hours in length and will be defined by a specific date-time group (DTG) (fig 6-3).

Within the time frame the package will be employed with a shorter timespan, which is expressed in minutes. The length of the timespan will depend on the length of the nuclear schedule of fires; the capability of delivery units to execute the package; the operational necessity for command control, warning, and tactical flexibility; and *National approval*. The timespan will be

limited to promote a clear perception by the enemy of a use that was voluntarily constrained rather than limited because of enemy nonnuclear, nuclear, or chemical response. After the NCA has approved a package for use, corps will determine the best time within the approved time frame to "begin the timespan."

Area. The *area* that is defined for a corps package must bound all the tactical contingencies for which that package was planned. Generally, that area will extend from just behind an assumed line of contact to the range of delivery systems available to the corps and will extend all across the corps front. Constraints, however, may preclude use in certain areas such as across political boundaries. If subsequent packages are planned in depth, the package areas will usually overlap.

FIGURE 6-3. TIME FRAME, TIMESPAN,



Use Constraints. In addition to the package parameters, use constraints always must be specified for a package. As a minimum, *collateral damage preclusion criteria* are use constraints that always must be identified. Collateral damage is defined as casualties among civilian personnel or damage to their facilities.

An example of a corps package follows:

THE CORPS NUCLEAR WEAPONS PACKAGE

PACKAGE "pine"

Purpose: To prevent enemy breakthrough in corps area by * divisions.

Number: Total not to exceed * nuclear weapons consisting of:

- a) None larger than (yield)
- b) * 9-80 (10 KT)**
- c) * 8-59 (5 KT)
- d) * 6-38 (2 KT)
- e) * 5-24 (1 KT)
- f) * 3-12 (0.5 KT)
- g) * 2-11 (0.1 KT)

Numbers and yields of weapons may be adjusted to provide maximum effectiveness within constraints established by higher authorities (unless prohibited).

Time: Time frame: (To be specified in request)
Time * minutes

Area: HB0197 to HD8060 to HA2550 to HB0105

* Actual numbers are situational.

Note: Hypothetical yields.

USE CONSTRAINTS

Preclude 5% personnel casualties requiring hospitalization and 5% incidence of moderate damage to buildings in communities over * (99% assurance).

*Actual numbers (weapons, minutes, population) are situational.

NUCLEAR WEAPONS "SHORT NAMES"

New short names identify nuclear weapons by effects rather than by yield to give commanders and staffs a better feel for nuclear weapons capabilities. A short name consists of two numbers separated by a dash. The first number is the radius of damage in hundreds of meters for immediate transient incapacitation to personnel in tanks. The second number is the distance in hundreds of meters beyond which there is negligible risk to unwarned, exposed personnel. There is no buffer distance included in the second radius.

6-4. Nuclear Fire Planning

□ Introduction

Planning for the use of nuclear weapons on the battlefield is similar to fire planning in that

- it requires meticulous and comprehensive planning oriented toward likely tactical contingencies; and
- it requires flexible and responsive execution.

Nuclear fire planning is based on planning guidance, the terrain, the situation, enemy and friendly capabilities, and assumptions about the most probable courses of events. Nuclear fire planning is *continuous* and is done *along with* fire planning in the corps and division FSEs. This section outlines the *prehostility* fire planning process in general terms. For detailed nuclear fire planning techniques, see appendix I.

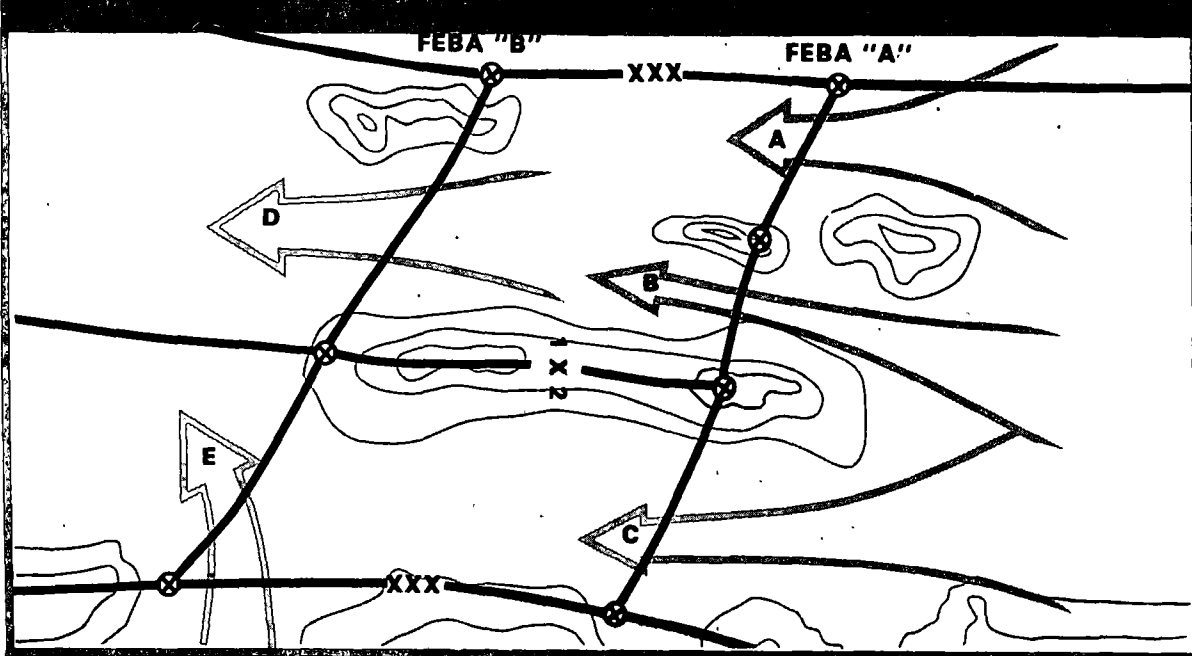
□ The Subpackage

A subpackage is a plan for use of a portion of a corps package within a division area in support of a single corps contingency. *Subpackages will be employed only as a part of a corps package.* Normally, subpackages will be planned and employed only by division; however, a separate brigade or an armored cavalry regiment in the corps may also have subpackages. Each division will plan a subpackage for each corps contingency that they have been directed to support.

□ The Package Planning Process—An Overview

A nuclear weapons package contains the total number of nuclear weapons required to support any one of several anticipated corps tactical contingencies. The planning process begins when the corps commander identifies these contingencies in his planning guidance. Figure 6-4 shows a situation in which five corps contingencies have been identified.

FIGURE 6-4. TACTICAL CONTINGENCIES.



Divisions plan subpackages for each tactical contingency and forward their plans to corps. Corps integrates subpackages into nuclear weapons requirements for each contingency. These requirements are then resolved into the fewest number of distinctly different packages. Normally, all

contingencies that occur at the same general depth in the corps area will be included in a single corps package that will support any one contingency in that package. The planning process is shown schematically in figure 6-5.

FIGURE 6-5. THE PACKAGE PLANNING PROCESS.

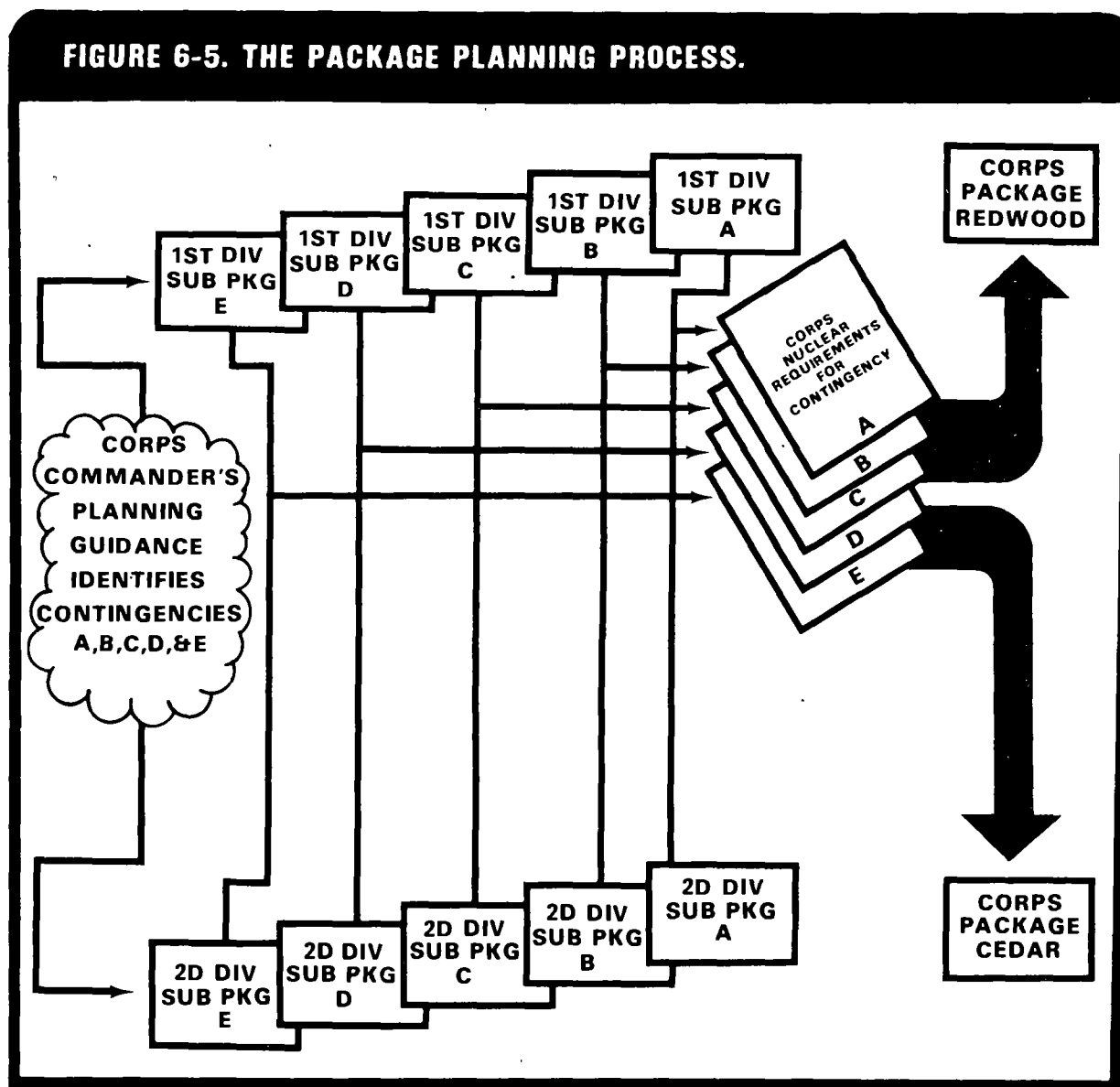
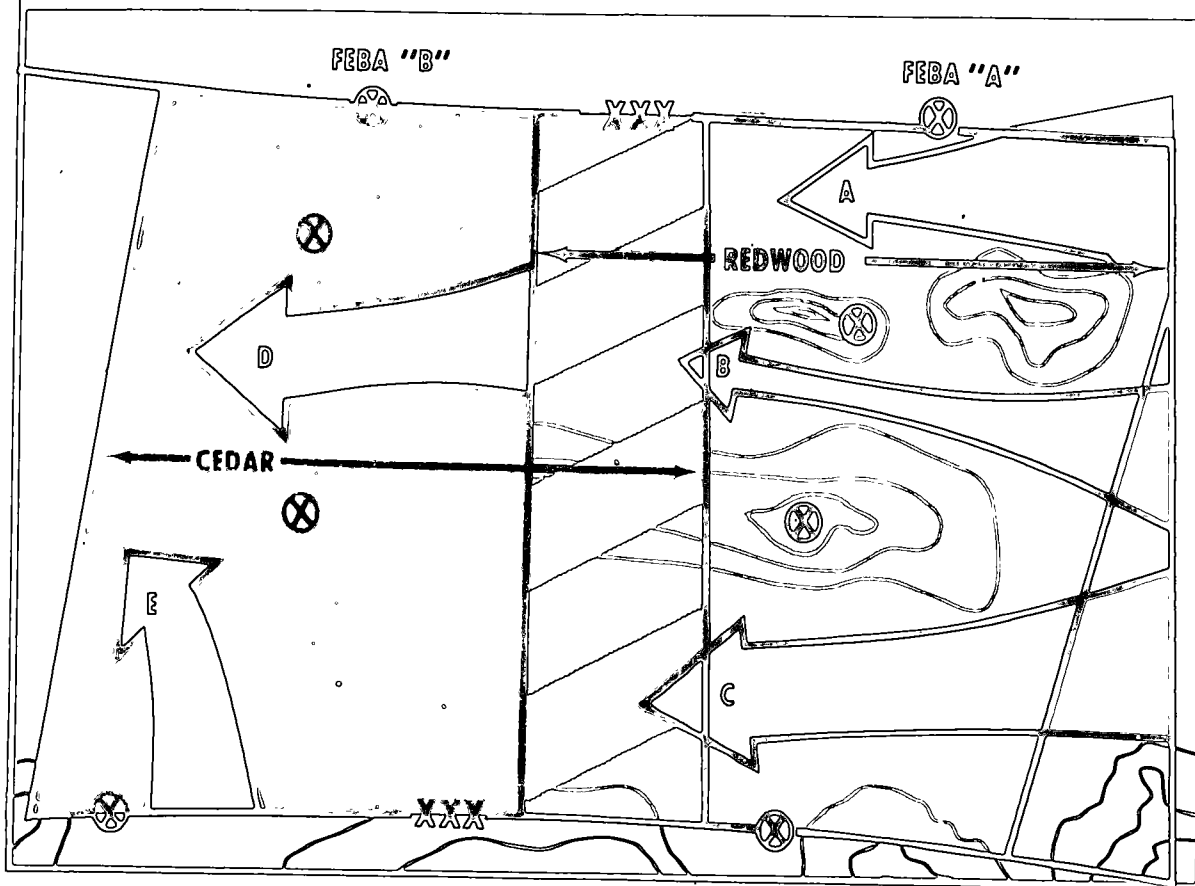


FIGURE 6-6. PACKAGES REDWOOD AND CEDAR.



Two nuclear weapons packages result—package REDWOOD and package CEDAR. These are shown in figure 6-6.

☐ Nuclear Planning Guidance

The planning process begins when the corps commander provides *nuclear planning guidance* to his major subordinate commands. Portions of this guidance may be set forth in SOPs. The corps commander's guidance must:

- ☐ Identify the various tactical contingencies that might require the use of nuclear weapons.
- ☐ Specify the tactical circumstances under which a request for nuclear weapons will be initiated.
- ☐ Specify the defeat criteria for the enemy force. Specific coverages and casualty or damage levels normally are set forth in the corps SOP; for example: "Achieve 30 percent immediate transient incapacitation (ITI) to personnel in tanks over no less than 40 percent of enemy maneuver units."
- ☐ Identify delivery systems and yields available to be used in the corps area to include air-delivered weapons. Corps will also establish a nuclear weapons reserve from those weapons allocated for planning.
- ☐ Specify troop safety criteria.
- ☐ Specify changes from the corps SOP.
- ☐ Direct divisions to plan a subpackage for each tactical contingency identified.

Collateral damage preclusion guidance will be established to insure that total numbers of civilian casualties and nonmilitary damage is consistent with objectives. Corps SOP will specify the collateral damage preclusion constraints in terms of precluding certain levels of weapon effects in specified areas, usually communities of a certain size or larger.

Constraints may address preclusion of both personnel casualties and damage to structures; for example: "Preclude 5 percent incidence of casualties requiring hospitalization and 5 percent incidence of moderate damage to structures with a 99 percent assurance in areas of * population or more." Corps may be required by higher echelons to estimate the total amount of collateral damage that would be caused by use of a package.

If a requirement for a collateral damage prediction exists, it should be explicitly stated in planning guidance, plans, and orders. The collateral damage preclusion criteria used in planning a package should be included with the other identifying package parameters of total weapons, time, and area.

□ Divisions Plan Subpackages

Subpackages are planned in the division FSE with the assistance of other staff sections. The staff determines weapons requirements and aimpoints using the following "tools." The G5 provides a *preclusion overlay*. This overlay identifies the areas where nuclear weapons effects must be precluded to comply with the commander's collateral damage preclusion requirements. The G2 and G3 provide a *nuclear planning threat overlay* for each corps contingency. This overlay portrays where the enemy's units are assumed to be at the time nuclear weapons are to be used. It is based on a detailed analysis of enemy doctrine, the terrain, and friendly operations. This overlay assists the FSE nuclear fire planner in

determining the number and mix of nuclear weapons that will be required.

□ Preclusion-Oriented Analysis

FSE planners use a composite of the preclusion and nuclear planning threat overlays to select initial aimpoints and weapon yields. These two overlays and the tactical map make up the nuclear planning map. Essentially, preclusion-oriented analysis delineates those areas where weapon aimpoints cannot be placed (preclusion overlay) and then attempts to obtain the greatest coverage in those areas where enemy troop units are expected to be (threat overlay) at the time of use. Two methods are available to the analyst to accomplish this task, the contour technique and the template technique. In actual practice, either technique alone or a combination of the two may be used in the planning phase.

The contour technique involves the graphical representation of all applicable preclusion contours (minimum safe distance (MSD), least separation distance (LSD), collateral damage distance (CDD)) on overlays. Each contour marks the distance that the aimpoint must be placed away from friendly troops, objects of military interest, or civilian population centers to avoid exceeding the acceptable risk of injuries or materiel damage. These distances are yield and system dependent. For planning purposes, two-thirds of maximum range is used to calculate the preclusion distances. Aimpoints are then selected on or outside the applicable preclusion contour using the radius of damage (RD) to determine possible coverage of assumed enemy locations.

In the template technique, weapon templates are constructed for each delivery system and yield. The inner circle corresponds to the RD, and the outer circle corresponds to the CDD. Friendly troop considerations and possible obstacles (MSDs and LSDs) still may be represented as contours on an overlay.

These are easier to portray graphically and, in the case of LSDs, generally less numerous. However, all can be included on the template by simply identifying additional concentric circles on the template corresponding to the MSD or LSD (figure 6-7). The template is physically moved around the nuclear planning map, and aimpoints are selected to insure that the applicable preclusion circles do not enter preclusion areas. Both the contour and template techniques are shown in figure 6-8.

FIGURE 6-7. WEAPONS TEMPLATE.

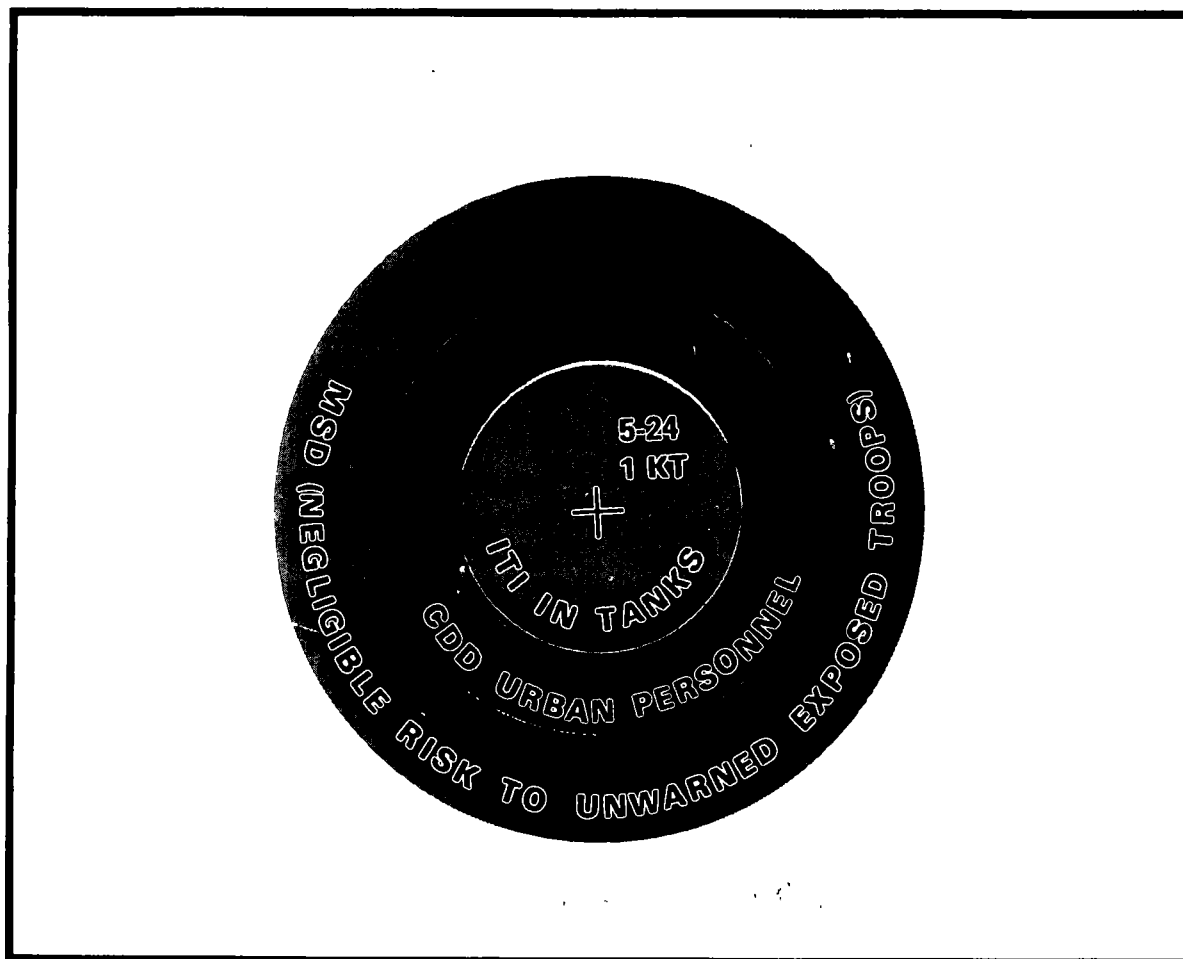
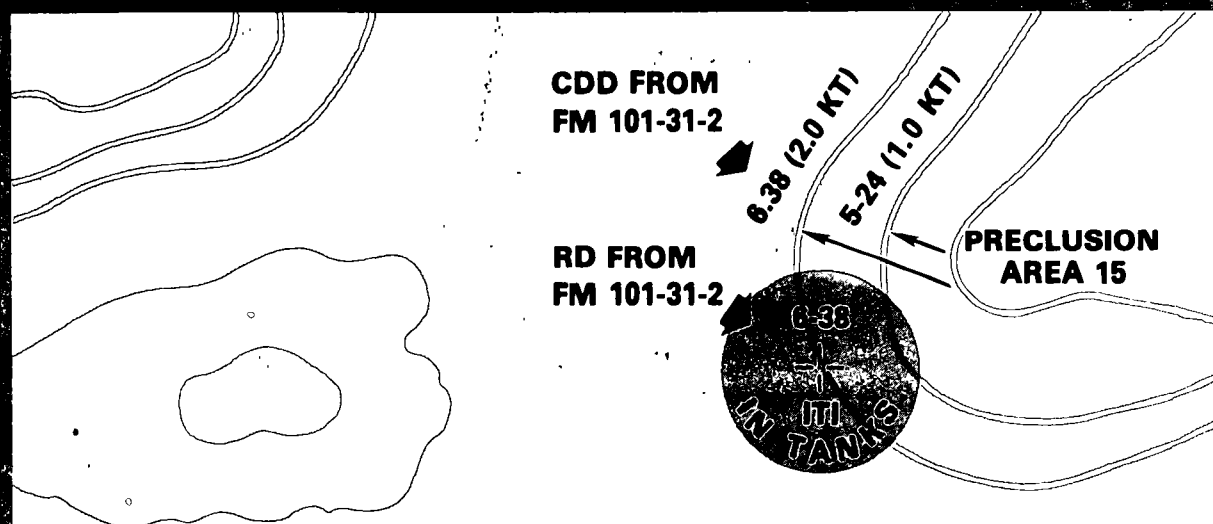
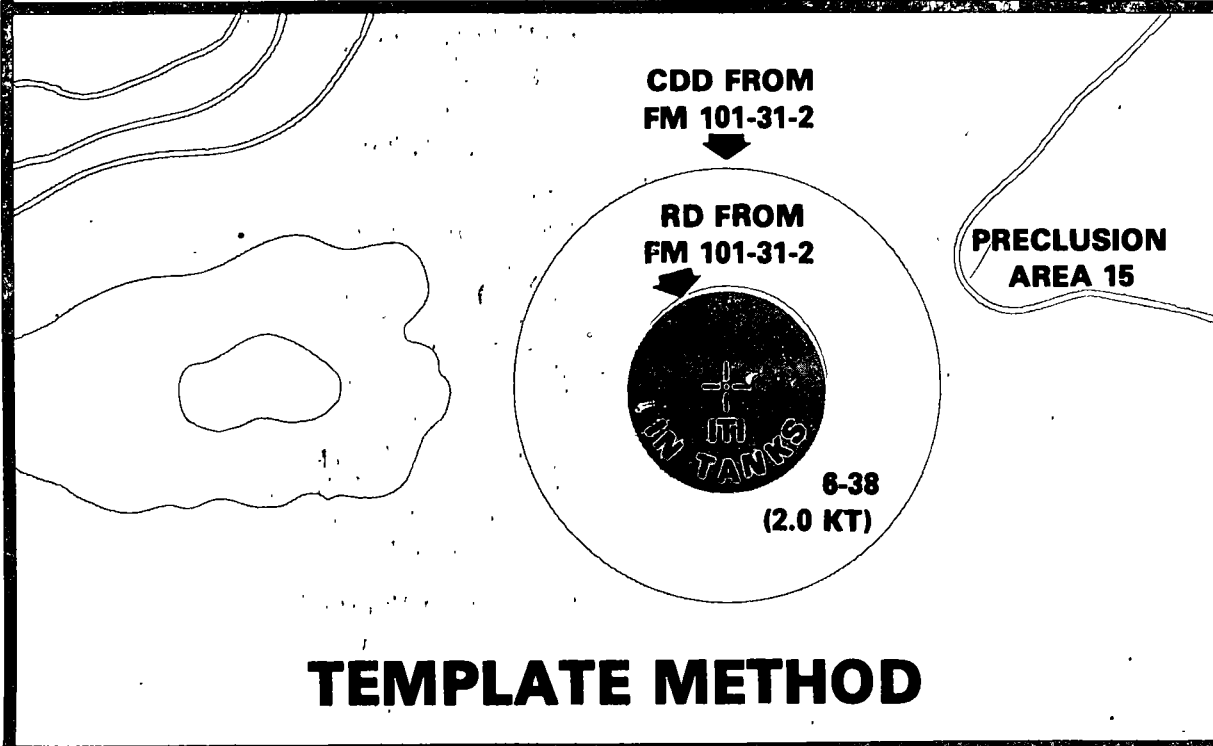


FIGURE 6-8. PRECLUSION-ORIENTED ANALYSIS METHODOLOGY.

CONTOUR METHOD



TEMPLATE METHOD

Planners attempt to obtain maximum coverage of enemy unit locations within preclusion constraints. They then assess the adequacy of the planned subpackages to meet the commander's defeat criteria and add weapons and aimpoints as necessary.

Key factors in preclusion-oriented analysis are that they are based on precluding collateral damage; weapon and aimpoint selection are based upon enemy doctrine, terrain analysis, and friendly operations; most effective yields are used with preclusion constraints to obtain maximum coverage of assumed enemy locations; and initial planning is done prior to hostilities.

☐ Corps Plans the Packages

The division FSE will send an aimpoint list or overlay for each subpackage to the corps FSE. Under the supervision of the corps FSCoord, the plan for each contingency is supplemented with corps weapons and aimpoints using the same techniques used to plan the division subpackages.

The nuclear weapons requirements for each contingency are then resolved into the fewest number of distinctly different packages. All contingencies that occur at the same general depth in the corps area normally are included in a single corps package that will support any one contingency in that package. Package depths may vary considerably depending on the terrain, the range of delivery systems available to the corps, and intelligence/target acquisition capabilities. When one of the contingencies is in a distinctly different area, for example to support maneuver forces countering an airborne or air assault attack well to the rear, a different package is established for that contingency. An *area* and *timespan* are determined that are suitable for all contingencies included within each package. Once developed, corps should forward package plans to higher headquarters for evaluation by military and political authorities.

□ Reapportioning the Package

Then the weapons in the planned package are apportioned to the subordinate divisions in the operation plan (OPLAN) (fig 6-9). The corps OPLAN will also identify the *purpose*,

area, *timespan*, and *use constraints*. Division OPLANs will identify the subpackage *weapons*, *purpose*, *area*, *timespan*, and *use constraints*. Aimpoint lists and overlays will be exchanged between corps and division in the planning process.

FIGURE 6-9. EXAMPLE OF INFORMATION IN A NUCLEAR FIRE SUPPORT PLAN.

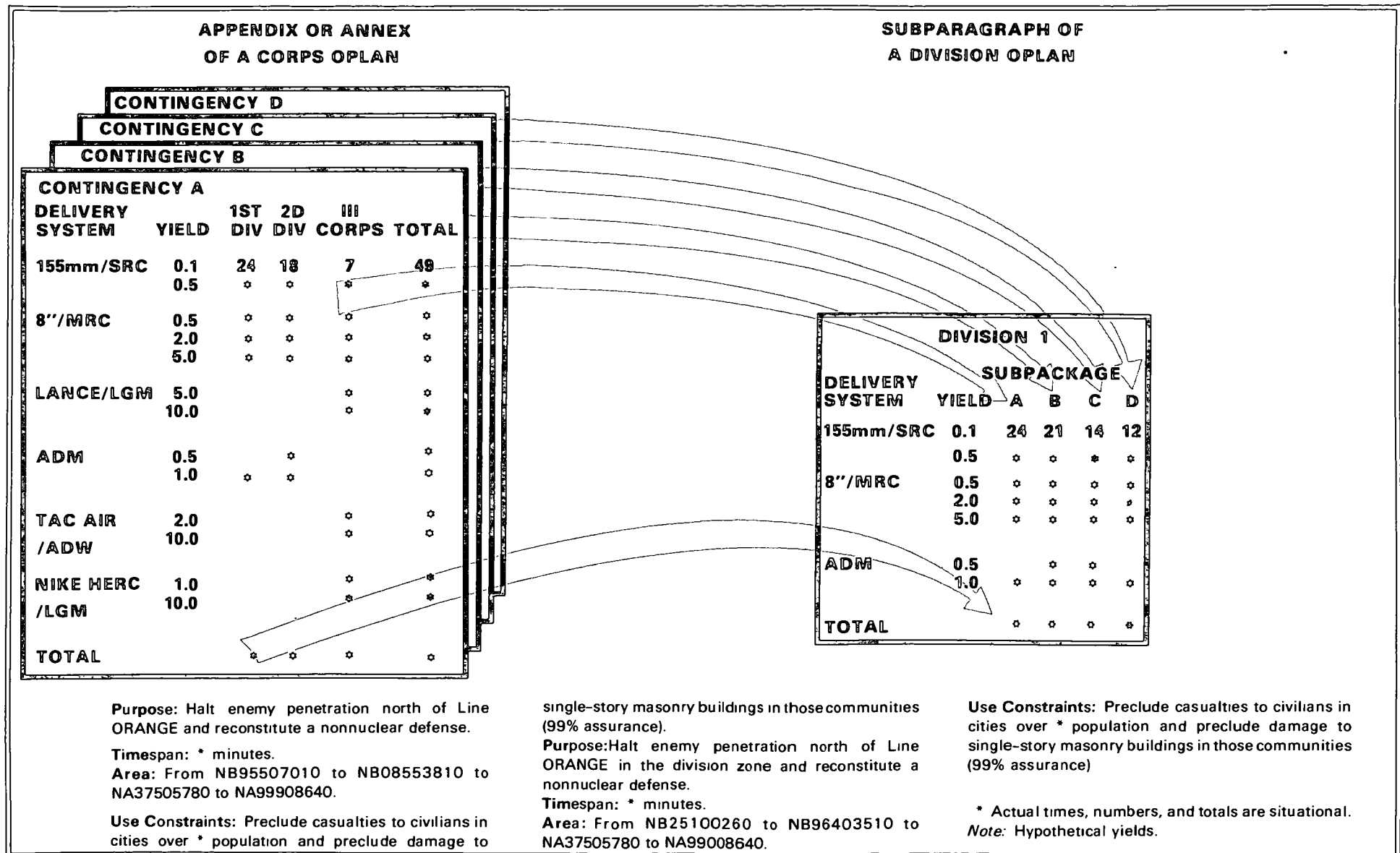
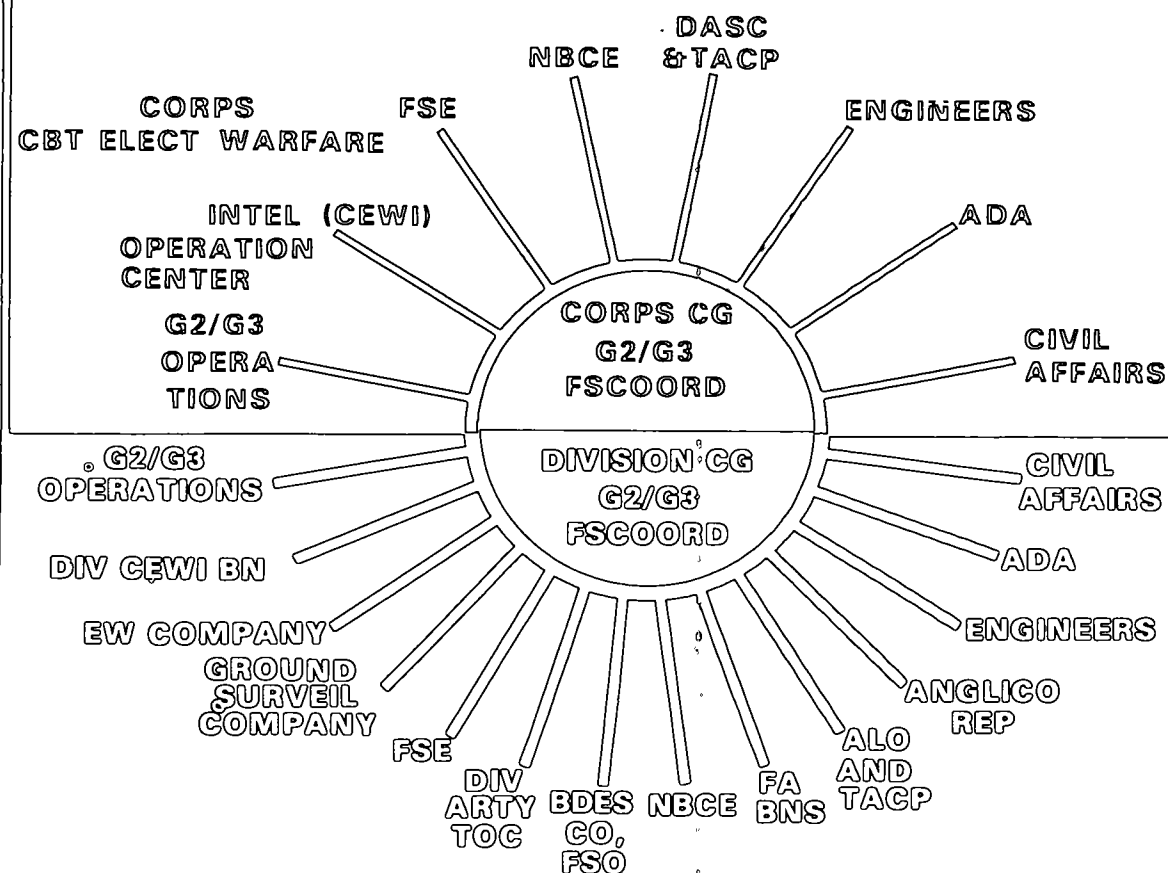


FIGURE 6-10. NUCLEAR PLANNING AND COORDINATING TEAM.



□ The Nuclear Support Plan

Nuclear package planning is the formal planning that results in the corps nuclear support plan. This plan is referenced in paragraph 3 of an OPORD. Once completed, the plan is distributed from corps to the divisions. The nuclear support plan is discussed in appendix I.

□ The Nuclear Planning and Coordinating Team

The commander has numerous staff members to assist him in the planning and coordinating of nuclear fires. The team members are shown in figure 6-10.

At corps and division, the G2, G3, and FSCoord compose the principal advisory and action team.

□ The corps G2 receives information from:

Strategic and National intelligence agencies.

Combat electronics warfare intelligence (CEWI) group.

Military intelligence (MI), to include aerial surveillance.

The direct air support center (DASC).

□ The CEWI group also provides:

Signal intelligence and Electronic warfare information.

□ The corps FSCoord/corps artillery commander has the key role of managing the nuclear weapons and delivery systems to execute the nuclear package. He monitors their status to include location associations with subpackages, and losses. Losses of nuclear means are especially important because a nuclear package must be fired before those means become too severely crippled. He also

advises the corps commander on the tradeoffs between nuclear and nonnuclear fire support and recommends the weapons and weapon systems to support all tactical contingencies. The division artillery commanders make similar recommendations at the division level.

Other elements of the team provide the details from which the G2, G3, and FSCoord make their recommendations and the commander makes his decision.

- The FSE and the nuclear, biological, and chemical element (NBCE) target analysts develop the data to put the most effective weapons on the most critical terrain and predicted enemy locations. They apply the commander's criteria—and preclude collateral damage and fallout as prescribed.

They recommend defense against enemy nuclear attack.

- The DASC (corps), air liaison officer (ALO) (division), and their tactical air control parties (TACP) provide information and advice on employment of nuclear and chemical weapons by air-delivered means.
- The ANGLICO representatives at division provide availability and capability information on Navy and Marine air assets.
- Engineer and air defense artillery (ADA) (Nike Hercules in the surface-to-surface role) representatives advise and plan on the use of their weapon systems.
- Civil-military operations personnel provide information on population centers where significant casualties could result from nuclear or chemical employment.
- The division artillery TOC manages the division counterfire program by merging intelligence and target acquisition data from divisional and outside sources. Accordingly, the TOC is a good source of information to assist the FSCoords in their recommendations to the commander.

SUMMARY OF PREHOSTILITY PRECLUSION-ORIENTED PLANNING

WHAT	HOW	WHO
CORPS BEGINS PACKAGE DEVELOPMENT WITH COMMANDER'S GUIDANCE	Identifies □ Tactical contingencies □ Circumstances for employment Specifies □ Defeat criteria for threat □ Collateral damage preclusion □ Available delivery systems □ Troop safety criteria □ Changes to corps SOP	CG, G3
DIVISIONS DEVELOP SUBPACKAGES FOR EACH CONTINGENCY BASED ON	Commander's guidance Scheme of maneuver Weapons available Opposing force doctrine All source intelligence Population centers	CG G3 G2 G5
CORPS CONSOLIDATES SUBPACKAGES BY	Adding aimpoints as necessary Resolving requirements for each contingency	FSCoord
CORPS DEVELOPS PACKAGE(S) IN DEPTH BY	Integrating requirements into distinctly different packages	FSCoord
CORPS FORWARDS PACKAGES TO HIGHER HEADQUARTERS WHICH	Assess the military and political impact Maintain a package file to expedite approval when requested	CG and Staff
CORPS APPORTIONS WEAPONS TO DIVISIONS TO INCLUDE	Area Time frame and timespan Employment constraints Prescribed nuclear loads (PNL)	CG G3 FSCoord
UNITS EXERCISE PLANS IN CPX's AND FTX's TO	Keep familiar with coordination and release procedures Refine or revise the package	CG's and Staffs

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□ **Other Prehostility Nuclear Planning Considerations**

The Commander's Estimate. In chapter 3 the war gaming performed by the commander and his FSCOORD was discussed; i.e., 1) analyzing the mission, 2) gathering information and determining significant factors, 3) comparing alternatives, and 4) announcing decisions and recommendations.

The same process applies to nuclear fire planning and coordination—and it answers the same question, "How will I apply my resources to best accomplish my mission?" It is particularly essential in planning nuclear fires that the commander and his FSCOORD stay in step throughout the complete estimate-war gaming process, because if use of a nuclear package is considered, the corps is in a serious tactical situation.

The FSCOORD's process of performing required functions and applying planning and coordination principles through war gaming with the commander and his staff results in the nuclear support plan for the packages selected by the commander. During war gaming, each package is hypothetically fired on the array to insure adequate coverage and enemy defeat. Collateral damage is war-gamed along with military effectiveness. The FSCOORD then incorporates the package into the nuclear support plan.

Fire Support Coordinating Measures. Characteristics of restrictive and permissive coordinating measures for nonnuclear fire support apply to nuclear fires. FSCOORDs should, however, keep some key points in mind:

- The brigade or division coordinated fire line applies to surface-to-surface fires and their effects. It does not apply to nuclear fires.
- The corps FSCL facilitates the attack of targets by all fire support means,

including TACAIR and nuclear fires. No coordination is required provided fires or their effects (except dazzle) do not fall short of the FSCL. All units that could be affected by dazzle are notified because of the large distances concerned.

Command Control and Communications. A most critical factor in nuclear operations is the personal interactions—guidance and orders—that insure the fires of a nuclear package impact at the designated time and place.

The communications facilities available to the FSCOORD are detailed in FMs 6-20-1 and 6-20-2. The rapidity, complexity, and seriousness of employing nuclear weapons places a tremendous strain on communications systems—systems already stretched by nonnuclear war demands, attack by enemy EW elements, combat losses, and wide frontages. There is no easy solution to this problem, but practice and training supplemented by vehicle and aircraft messengers will help. Procedures for dealing with anticipated communication problems may be specified in SOPs and exercised frequently for proficiency and improvement.

The mental war gaming done by the commander, maneuver staff, and FSCOORDs at corps and division is critical. Field exercises are enhanced by sending practice message traffic that includes release procedures, permissive action link (PAL) instructions, and fire missions to *all* units and agencies. Units should be positioned in configurations similar to those from which they would fire the packages. This allows FSCOORDs to determine potential problems and work out solutions to them in advance of hostilities. OPSEC and, in particular, electronic countermeasures should be practiced. The command must train to reduce the distinctive communications signature associated with nuclear operations.

Nuclear Ammunition Distribution.

Corps is apportioned a quantity of nuclear weapons. Some of these weapons are further apportioned to the divisions. Field artillery and engineer units are provided a prescribed nuclear load that places weapons in the units that will most likely fire the subpackages. Division PNLs are listed in the division OPORD. Nuclear weapons from Navy or Air Force delivery systems may be included in division subpackages, but weapon custody will remain with those services. Final PNL distribution to firing units is a critical factor. For a number of reasons not all of the firing units originally scheduled to fire the package may be available. Additionally, the tactical situation may be changed significantly from the plan. Accordingly, the FSCORDs must arrange and insure final redistribution of weapons so the nuclear package can be fired as approved. This coordination can place heavy demands on communications and transportation. Nuclear weapons redistribution may require transportation and security assistance from maneuver elements and other combat support and combat service support units.

Poststrike Analysis. Poststrike analysis normally is coordinated from the corps/division FSE. The FSE, jointly with the corps TOC and division main CP, must:

- ☐ Determine where the requirement for poststrike analysis will exist.
- ☐ Designate sources to collect poststrike analysis information.
- ☐ Evaluate poststrike effects to determine if the enemy is stopped, how badly damaged he is, and his capability to resume the attack.
- ☐ Analyze civilian casualties and facility damage and determine what actions are required.

Poststrike analysis uses all information means available; however, requirements for speed in evaluating strike effectiveness place

principal reliance on aerial surveillance, frontline commanders, and FIST and FSO reports. Technical procedures for poststrike damage prediction are in FM 101-31-1.

6-5. Planning and Use During Hostilities

☐ **Planning and Coordination During Hostilities but Prior to Request for Release**

Corps nuclear weapons packages published in OPLANs prior to hostilities, and in OPORDs during hostilities, are *not* fixed target lists. The package parameters—*purpose, number of weapons, time frame, timespan, and area*—and use constraints provide the required National-level control over nuclear use. Within the limits of the package parameters and use constraints, the package will be refined to provide the best tactical effect. The package concept, therefore, provides the tactical commander the *flexibility* and *responsiveness* to be effective in an actual conflict without violating NCA directives. Like nonnuclear fire support planning, nuclear fire support planning is a *continuous and dynamic process*. Throughout prehostilities and after a conflict begins, staff sections at division and corps work to insure a high state of readiness to use a corps package if required. Recognizing the limitations of target acquisition, they plan to obtain maximum lethal weapons effects in those areas the enemy *must* occupy.

During hostilities, each command echelon will provide more detailed nuclear planning guidance as the situation develops. Within the limits of this guidance, an appropriate planned package is selected and refined to support planned operations. This might

include modification of number or size of weapons, time, or area. The time frame during which the package might be needed is also predicted. This is not a one-step refinement but a *continuous* process of adapting plans to the situation. It must be continuous so that when the corps commander decides to use nuclear weapons, effective packages are ready. As the likelihood of requesting a nuclear weapons package appears to be more imminent, the following steps are begun—usually in the order shown below:

- Identify the contingency used for planning that is closest to the actual tactical situation.
- Reapportion weapons between subpackages.
- Identify and establish priority aimpoints.
- Make tentative associations of delivery units with aimpoints on the basis of current unit locations and PNLs.
- Redistribute the PNL as required.

An overview of planning activities is as follows:

PLANNING DURING HOSTILITIES BUT BEFORE RELEASE REQUEST

WHAT	HOW	WHO
Corps Reviews Nuclear Plans	□ Assesses tactical and strategic situation. □ Provides guidance to corps staff. □ Provides guidance to the division.	CG, G3, G2, FSCOORD
Corps Selects Package for Corps Contingency	□ Identifies prehostility package and contingency that is closest to the real situation. □ Direct division to refine their subpackages. □ Refines package to better support tactical operations. □ Reapportions weapons between subpackages. □ Begins refinement of aimpoints. □ Makes tentative association between aimpoints and delivery units for corps controlled weapons. □ Recommends PNL redistribution as required.	Corps CG and Staff CG, G3, FSCOORD G2, G3, FSCOORD FSCOORD
Corps and Divisions Continually Assess Tactical Developments	□ Monitors conventional defense. □ Monitors locations of nuclear weapons and delivery systems.	CG's, Staffs Tactical Units

☐ Nuclear Package Request and Release

Nuclear use begins when the corps commander decides that the tactical situation is going to warrant use of nuclear weapons and submits a request for an appropriate package. Indicators to the corps commander that a situation is developing that warrants the use of nuclear weapons are:

- ☐ corps under sustained attack by superior forces;
- ☐ own forces becoming fully committed and not likely to be sufficient;
- ☐ reinforcements, combat support, and combat service support not available to sustain the force; and
- ☐ survivability of the force in question to include nuclear weapons and delivery systems attrition.

Corps will usually request a package exactly as planned and recorded in echelons above corps. If, however, refinement during hostilities indicates that a change must be made in the number of weapons, the area, or the timespan, corps will request the package as modified by the specified package parameters. The corps commander must weigh using the package as planned against the delay that might be caused by requesting changes.

During the nuclear planning process, echelons above corps will have evaluated the tactical and strategic impact of each package prior to hostilities. Nevertheless, corps should anticipate the need for nuclear use and request a package well before the beginning of the time frame for which it is needed. The NCA could—if the tactical and strategic situation warrants—approve the use of a package *before* a corps request is received. Timing is critical in the planning and decisionmaking process to put package execution into motion within the corps. The corps commander must become personally involved at certain critical thresholds.

His guidance and direction at these points insure that the refinement actions going on simultaneously at all levels fit his concept of operations. The capability and time required for delivery units to react to changes are also important considerations as the nuclear package refinement process is continued until used.

The corps FSCoord (corps artillery commander) is a key figure in the nuclear planning and coordinating process. He advises the corps commander of the status of nuclear delivery means and supervises the nuclear planning and coordinating activities in the main FSE.

☐ Corps Controls Use

The use of an approved package is controlled by corps. Weapons are used only in those areas where the presence of enemy units or installations is known or highly probable and against fixed targets that are critical to the enemy. Corps may reapportion weapons among division subpackages and will select a time to initiate the package. Corps also may maintain control over the use of each weapon in the package until weapon launch. Within the limits established by higher authority, corps will determine the degree of freedom divisions may exercise in the use of the package. Once corps has selected the time to begin the package, divisions normally will refine and employ their designated subpackages within the approved employment constraints, approved package parameters, and normal fire support coordination procedures. Most refinement will be conducted in the division FSEs; however, division FSEs may delegate weapon and aimpoint refinement authority to subordinate elements. Within the limits established by higher authorities, such refinements may include authority to —

- ☐ move aimpoints,
- ☐ adjust yields within constraints, and
- ☐ change time on target.

When delegating refinement authority, care must be taken not to reduce the desired level of casualties or damage in one area at the expense of another and to preclude preinitiation and other weapon interference. This is accomplished by placing limits on *how far* aimpoints may be moved and by analyzing any changes in time on target (TOT) for specific weapons relative to nearby aimpoints. To insure the safety of friendly troops, the minimum safe distance for weapon aimpoints from friendly troops must be considered during final weapon and aimpoint selection. Refinements may be made right up to the time of firing if the response capability of delivery units permits. Details of package refinement are discussed in appendix I.

☐ Areas of Concern for FSCORDs

Corps and division FSCORDs should view the use of a nuclear package as a large-scale, time-on-target fire mission. Coordination is more difficult because numerous delivery systems contribute, numerous units both in and outside the division participate, communications traffic may be heavy, and the actual package must be wholly contained within the timespan. Specific items of interest to FSCORDs include the following:

- ☐ Do planners have accurate, up-to-date firing point locations?
- ☐ Will firing units have the correct number and yield of nuclear weapons with enough lead time to prepare them so that firing is not delayed?
- ☐ Are all units familiar with communications and firing procedures so that execution goes smoothly?

☐ Warning Friendly Units

Planning must include unit warning procedures. The corps is responsible that all subordinate and adjacent units are notified of the package timespan. Actual warnings of imminent nuclear detonations are sent

through command channels from the corps and division FSEs, the division main and tactical CPs, the division artillery TOC, and, possibly, from firing units. The details and format for a STRIKWARN are in FM 101-31-1 and appendix M of this manual. These communications should be electronically or manually encoded, and if a brevity code is used, it should be: 1) in the CEOI; 2) encrypted using dryad system; and 3) phonetically the same as that used for daily traffic.

Sequence of Events for Nuclear Release and Use

An outline of a typical sequence of events during nuclear release and use is shown below.

① Circumstances for nuclear use exist when:

- ☐ Corps cannot accomplish mission with nonnuclear weapons.
- ☐ Corps will sustain such losses it will not be viable.

② Corps commander requests release:

- ☐ Well before time frame required.
- ☐ Usually for a preplanned package.

③ Package refinement performed within the limits established by higher authorities, use constraints, and package parameters including:

- ☐ Moving aimpoints.
- ☐ Adjusting yields.
- ☐ Reducing the number of weapons required.
- ☐ Adjusting schedule within timespan.
- ☐ Moving timespan within time frame.

④ Package release approved, which requires:

- ☐ Final selection of delivery units, weapons/yields, and aimpoints.
- ☐ Sending fire mission to delivery units.
- ☐ Coordinating with adjacent divisions.
- ☐ Issuing STRIKWARN.
- ☐ Firing the package.
- ☐ Poststrike analysis.

6-6. Chemical Planning and Use

US Chemical Policy

The basic elements of the US chemical policy are:

- ☐ No first use of lethal or incapacitating chemical agents.
- ☐ The option to retaliate by using lethal or incapacitating agents against an enemy force that uses them first.
- ☐ The requirement for National Command Authority approval for a retaliatory chemical strike.
- ☐ The requirement to avoid risk to civilian population to the maximum extent possible.

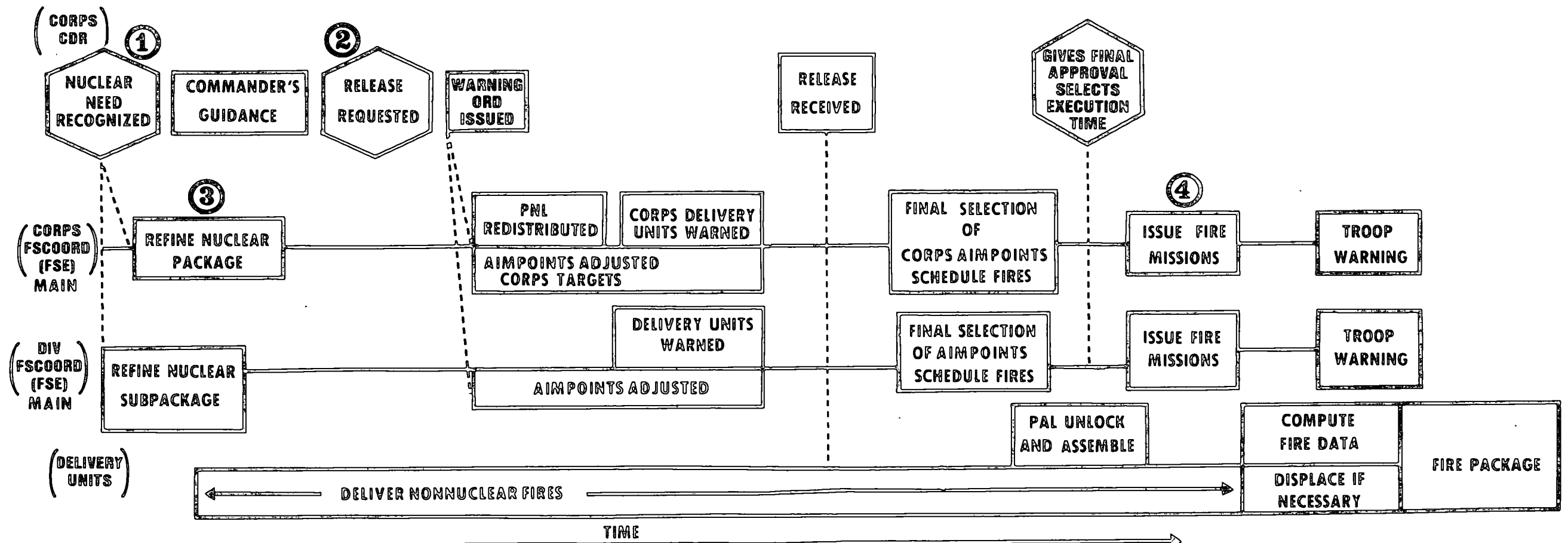
The decision to use chemical weapons made by the NCA in response to first use by the enemy will not necessarily permit unrestricted use of these weapons. Military or political considerations may still limit their use.

The Chemical Threat

Soviet and Warsaw Pact forces are well trained and equipped to use chemical weapons and survive in a chemical environment. Their chemical warfare policy is characterized by an aggressive program of research and development of chemical agents, delivery systems, and defensive equipment and regular, realistic training. Soviet doctrine stresses the surprise aspect of using chemicals as a contributor to superior firepower that facilitates major penetrations and destruction of forces.

The enemy force in the Far East has a limited chemical capability compared to US and European enemy weapons. They do have incapacitating and lethal agents that can be disseminated by aircraft, spray, bombs, and cannon shells. Delivery systems include aircraft, surface-to-surface missiles, multiple rocket launchers, and 122-mm guns or larger calibers. There is limited information regarding their first use of chemicals, but it can be assumed that the enemy force will use chemicals if the tactical situation warrants.

FIGURE 6-11. CRITICAL NUCLEAR "THRESHOLDS" /KEY NUCLEAR ACTIONS.



FOLD OUT FOR
PAGE 6-27 WITH FIGURE 6-11.

CHARACTERISTICS OF CHEMICAL AGENTS

This chart shows typical US agents and their effects. Opposing forces have similar agents with similar effects.

Category	Symbol	Normal Physical State When Disseminated	Persistency in Target Area	Tactical Use	Time to Incapacitation
Nerve Agent	GB	Vapor or Aerosol	A few minutes	Lethal effect on un-masked troops.	Very short; death may occur within a few minutes if agent is inhaled.
Nerve Agent	VX	Liquid	A few hours to a week	Lethal effect or contamination of terrain and equipment.	A few hours (delayed casualties).
Blister	HD	Liquid	Usually a few days, possibly a few weeks.	Incapacitation of troops; contamination of terrain and equipment.	A few hours (delayed casualties).

As a result of this significant chemical threat, the battlefield commander must consider:

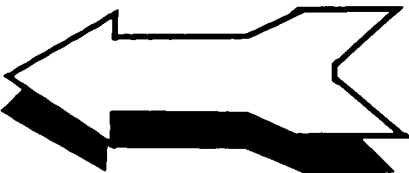
- The requirement to plan and train for chemical warfare to offset the degradation of personnel efficiency caused by operating in a chemical environment. The effectiveness of a chemical attack can be significantly reduced by proper training and use of protective equipment. Without this, chemical effects can be as devastating to personnel as nuclear effects.
- The planning and preparation necessary to retaliate against the enemy's first use of chemicals so he will terminate further chemical operations.
- The coordination required, after release, to combine chemical, nonnuclear, and nuclear fires with maneuver to achieve the best tactical effect.

Chemical Weapons Effects

Massed, surprise toxic chemical fires, if properly used, can:

- create tremendous casualties in a relatively short time;
- contribute to neutralizing the numerical advantage of the enemy;
- reduce the effectiveness of his combat formations;
- disrupt rear area operations and troop movements;
- restrict or deny the use of key terrain; and
- degrade the combat efficiency of enemy troops by forcing prolonged wearing of protective masks and clothing.

Chemical weapons have effects on unprotected personnel ranging from mild incapacitation to rapid lethality, as shown on the following chart:



☐ Chemical Weapons Applications

Chemical weapons and nuclear weapons have similar application in the offense and defense. Additional chemical applications are:

Offense

- ☐ Protect the flanks and axis of advance.
- ☐ Fix defensive and reinforcement forces in position.
- ☐ Contaminate counterattack and reinforcement routes.
- ☐ Isolate selected terrain.

Defense

- ☐ Contaminate avenues of approach.
- ☐ Slow attacking forces.
- ☐ Restrict or deny the use of critical terrain.

☐ Chemical Planning

The responsibility for planning, coordinating, and controlling chemical weapons remains at corps until after release has been approved and, most likely, through the first retaliation fires. The detailed planning and coordination is done at division. If our retaliation does not terminate chemical activities, authority to use chemical munitions can be given to division and brigade. They are more responsive to the tactical situation and can better control, coordinate, and exploit the use of the weapons. Our response to enemy chemical initiatives must be of such magnitude to: 1) produce significant casualties, 2) support our scheme of maneuver to attain a tactical advantage, 3) discourage further chemical use by the enemy, and 4) restrict his mobility and reduce his mission effectiveness.

Chemical retaliation must be sufficiently flexible to allow fires against specific limited targets or over a theater-wide area.

☐ Commander's Guidance

The planning process for chemical agent use begins when the commander provides planning guidance to his staff. This guidance will specify:

- ☐ Contamination requirements or restrictions (contamination desired, contamination authorized, preclude contamination). The impact on future operations caused by residual contamination must be considered.
- ☐ Effects desired on the enemy (lethal or incapacitating).
- ☐ Time in which casualties are required (immediate or delayed casualties).
- ☐ The amount of target coverage required.
- ☐ Limiting requirements. Limiting requirements specify the acceptable risk to friendly troops and civilians. Additionally, they may include such restrictions as areas that may not be attacked for political reasons and types of chemical agents that cannot be used.

☐ Use Considerations

Working with the FSE and the nuclear, biological, and chemical element, the FSCOORD plans the best combination of chemical weapon systems to meet the commander's guidance. In doing so, the FSCOORD considers:

- ☐ *Weather and terrain.* Weather (temperature, temperature gradient, and wind speed and direction) directly influences the effectiveness and persistency of an agent. For example, blister agent is most effective in hot, humid weather and freezes at 58° F. If HD is used for its vapor effect in cold weather, the agent would produce only minimal effects at best. Weather also has an indirect bearing on the effectiveness of agents by influencing the type and amount of clothing worn by enemy troops. As the temperature increases, troops generally wear less clothing, which exposes more skin area and increases their vulnerability to a chemical attack. Terrain must also be considered when analyzing a

target. Strong wind currents in mountainous regions break up agent clouds before the agent can reach full effectiveness. In heavily wooded areas, more munitions might be required if a substantial number of rounds fail to penetrate the jungle canopy. Weather information will be provided by the Air Force Air Weather Service. Wind data can also be obtained from the FA met section.

- ☐ *Training /protection status of enemy.* The casualties created by the use of a chemical agent are influenced by the training status of the attacked unit and the availability of chemical protective equipment and clothing. The G2 will assist in providing this information. The *best* place to cause casualties is with the units in contact and their reserves. However, these targets may be the hardest to attack because of the enemy's training level and special purpose protective equipment. Enemy frontline units should be attacked, but special attention should also be placed on rear area installations where the troops are more relaxed and protective equipment may not be as available. These are areas where we can surprise the enemy and inflict heavy casualties.

- ☐ *Target description.* The target size, location, and composition must be known if agent effects are to be accurately predicted. The CEWI group will assist in providing this information.

- ☐ *Unit(s) to fire.* The range from the delivery unit to the target affects target coverage and chemical munitions requirements. The delivery system ranges are provided by the division artillery TOC.

- ☐ *Delivery systems.* Normal delivery systems/chemical agent combinations are:

105-mm howitzer	GB, HD
155-mm howitzer	GB, HD, VX
8-in howitzer	GB, VX
115-mm rocket system	GB, VX
Aircraft	GB, VX

- ☐ *Chemical munitions availability.* If certain types of chemical munitions are limited in number, then it may be necessary

to recommend another type of fire support to accomplish the mission. Sufficient chemical munitions to achieve the results required by a commander normally are not carried in the FA battalion basic load. Significant logistical effort will be required to get the necessary munitions to the right firing units in time to fire the chemical missions.

☐ *Integration with other combat power.* Chemical fires may be used alone, but are more effective when mixed with conventional munitions or combined with nuclear weapons, if authorized.

☐ *Priorities of targets to be attacked.* The FSCCOORDs chemical recommendation to the commander includes the delivery unit and means, type of agent, method of attack, aiming points, time of attack, and predicted casualties.

☐ **Fire Support Coordinating Measures**

The principles of boundaries and restrictive and permissive coordinating measures also apply to chemical fires. Special emphasis must be placed on coordination between adjacent units, especially when the agent used forms a toxic chemical cloud that may drift beyond the boundaries of that unit.

☐ **Chemical Support Plan**

Chemical planning is formal planning. The document is a plan that supports an OPORD and is referenced in paragraph 3 of the OPORD. Details on the chemical support plan are contained in appendix I, and an example is at tab H of appendix I. Corps is the initiating and control headquarters for chemical plans. The division FSE, NBCE, and the chemical officer provide significant input to the plan on the basis of their operational areas.

☐ **Warning Friendly Units**

The NBC-3 report (chemical) described in FM 21-40 is used for warning our forces of friendly chemical attacks. This report gives

date/time of the attack, the location of the attack, and the area of expected contamination. The NBC-3 report (chemical) is disseminated through command channels by the FSCCOORD, NBCE, FSOs, and firing units. To prevent warning the enemy, this should be done by secure communications, operations codes, or enciphered brevity messages. Brevity lists are contained in the CEOI.

6-7. Nonnuclear-Nuclear Scenario

The scenario that follows highlights the planning and coordination conducted by various corps and division staff agencies in a specific tactical situation.

☐ **Prehostility Planning**

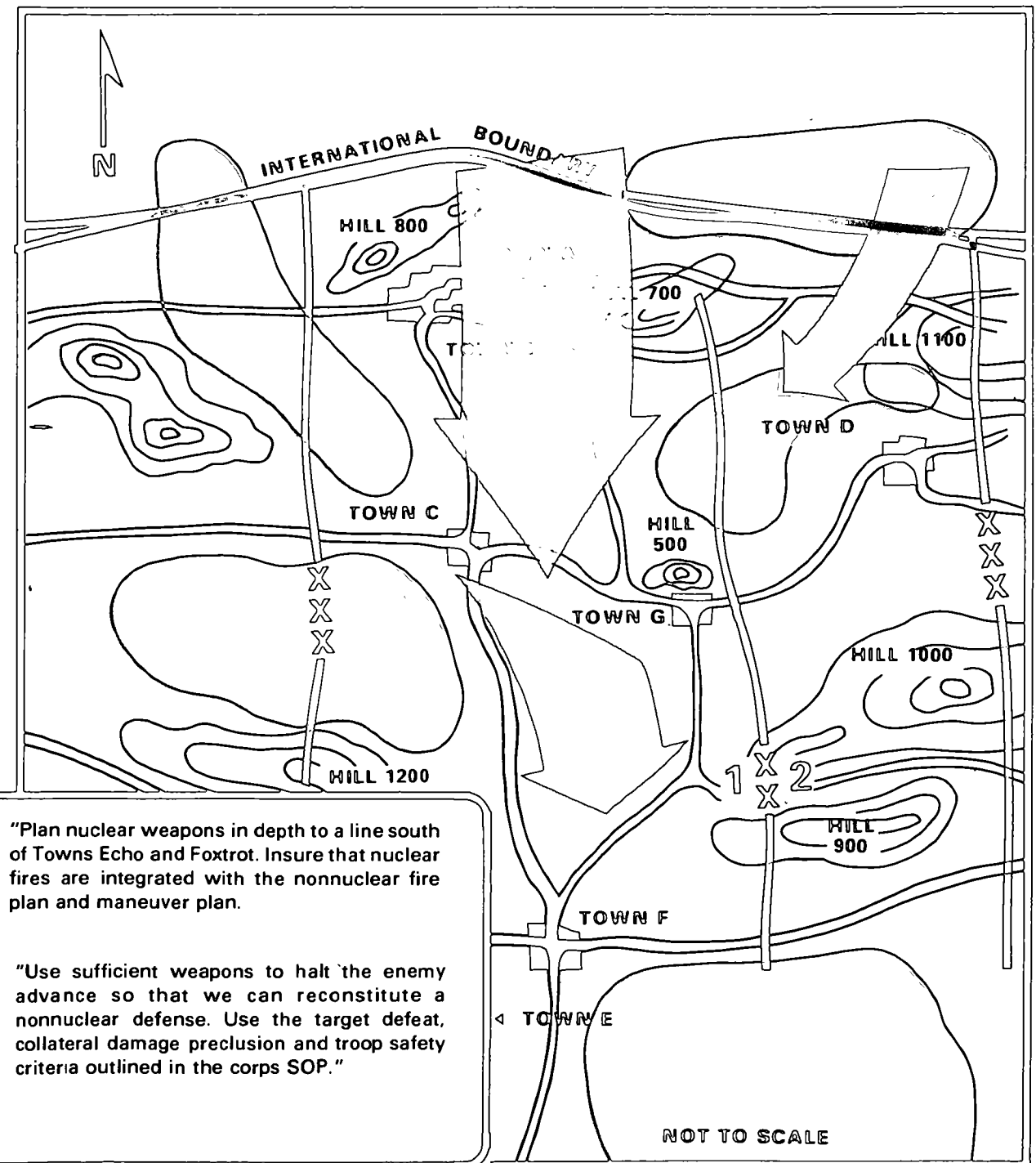
The 1st and 2d US Divisions are currently deployed in a defensive posture against a predicted force of four first echelon tank divisions and four second echelon divisions.

During the war-gaming process to develop the nuclear fire plan, several critical contingencies were identified that might require nuclear use (fig 6-12).

The corps commander gave the following guidance:

"The most critical area (1) is in the 1st Division sector. This is the best high-speed approach and where the enemy is most likely to make a breakthrough. The next most critical area (2) is through the 2d Division turning west, north of Hill 500 into the 1st Division sector. The final area (3) is the high-speed approach perpendicular to a line between Hills 1200 and 900. The enemy must be held north of this line so the corps has room to maneuver. Penetrations south of the line will seriously jeopardize the corps mission and allow the enemy easy access into the theater rear area.

FIGURE 6-12. CORPS CONTINGENCIES.



"Plan nuclear weapons in depth to a line south of Towns Echo and Foxtrot. Insure that nuclear fires are integrated with the nonnuclear fire plan and maneuver plan.

"Use sufficient weapons to halt the enemy advance so that we can reconstitute a nonnuclear defense. Use the target defeat, collateral damage preclusion and troop safety criteria outlined in the corps SOP."

The corps SOP specified:

Target Defeat Criteria: Achieve at least 30 percent immediate transient incapacitation (ITI) coverage to personnel in tanks over no less than 40 percent of enemy maneuver units in the first echelon divisions; 20 percent in second echelon divisions; and 50 percent coverage (ITI) of personnel in 130-mm, 152-mm, and multiple rocket launcher (MRL) batteries.

Collateral Damage Preclusion Criteria: Preclude 5 percent incidence of casualties requiring hospitalization to personnel and preclude 5 percent incidence of moderate damage to single-story masonry buildings in urban areas of * population or more (99-percent assurance level).

Troop Safety Criteria: Do not exceed a negligible risk to unwarned exposed personnel.

The corps commander further stated:

"Additionally, we have been allocated 12 air-delivered weapons for planning.

"Be prepared to attack with nonnuclear fires those forces that are still moving after the nuclear weapons have been fired."

Following the corps commander's briefing, the corps G3 provided assumed lines of contact for each of the three corps contingencies described by the corps commander and directed the divisions to develop division subpackages for each contingency. The corps and division G5 provided the preclusion overlay. The corps and division G2 sections evaluated the threat and performed a detailed terrain analysis to develop a threat array of maneuver and fire support units and command posts for each contingency. These arrays were used by the corps and division FSEs to determine nuclear weapon requirements to meet the commander's guidance.

Division FSEs developed subpackages for each contingency on the basis of area coverage, collateral damage constraints, and the predicted threat array. Overlays of proposed aimpoints, weapon requirements, schedule of fires, and timespan for each subpackage were sent from the division FSEs to the corps FSE. The corps FSE consolidated the division subpackages for each contingency and added aimpoints and weapons to determine the total weapon requirements for each contingency.

The corps G3, after coordination with the corps FSE, recommended two packages to support the corps operations—package ELM to support contingencies 1 and 2, and package OAK to support contingency 3. This is shown in figure 6-13. These overlapping packages permitted the corps commander maximum flexibility to assess when and where to initiate nuclear weapons use. The weapon requirements for all contingencies within each package area were consolidated by the corps FSE to determine the maximum number of weapons by yield needed to support any contingency in the package.

For each contingency, the corps FSE determined an area and timespan. The corps FSE then resolved these areas and timespans into a single area and timespan for each package that was suitable for all contingencies in the package. Packages ELM and OAK were forwarded to higher headquarters for assessment in the following format:

1st Corps Nuclear Weapons Package OAK

Purpose: To halt enemy penetration north of a line between Hills 1200 and 900 and permit reconstitution of a nonnuclear defense.

Number: * nuclear weapons not to exceed
* 155-mm/0.1 KT; * 155-mm/0.5 KT;
* 8-inch/0.5 KT; * 8-inch/2.0 KT;
* 8-inch/5.0 KT; * Lance/5.0 KT;
* Lance/10.0 KT; * ADM/1.0 KT;
* TACAIR/2.0 KT; * TACAIR/10.0 KT.

Time: Time frame—to be requested when needed.

Timespan—not to exceed * minutes.

Area: From MB9668 to MB0838 to MA3757 to MA9886 to MB9668.

Constraints: Preclude 5 percent casualties requiring hospitalization in urban areas over * population and 5 percent moderate damage to buildings in those communities (99 percent assurance level).

* Actual numbers are situational.

Note: Yields shown above are hypothetical.

The tactical utility and potential strategic impact of these subpackages were evaluated, and the planning was approved. The packages were reviewed and approved at higher headquarters, forwarded to higher military and political authorities, and published in the appropriate corps and division OPLANs. The packages were continually reviewed, revised, and exercised in corps and division FTXs and CPXs.

☐ Nuclear Planning During Hostilities

When hostilities began, the 1st Division was pushed back after several days of fighting (fig 6-14).

According to the G3, the enemy's first echelon forces had been stopped, but the division had all forces committed. A light infantry brigade was on the way to hold the critical terrain on Hill 1200. The 2d Division had stopped the enemy in sector, but the corps commander committed the separate mechanized brigade to reinforce the division. There were no more reserves available.

FIGURE 6-13. PACKAGES TO SUPPORT CORPS OPERATIONS.

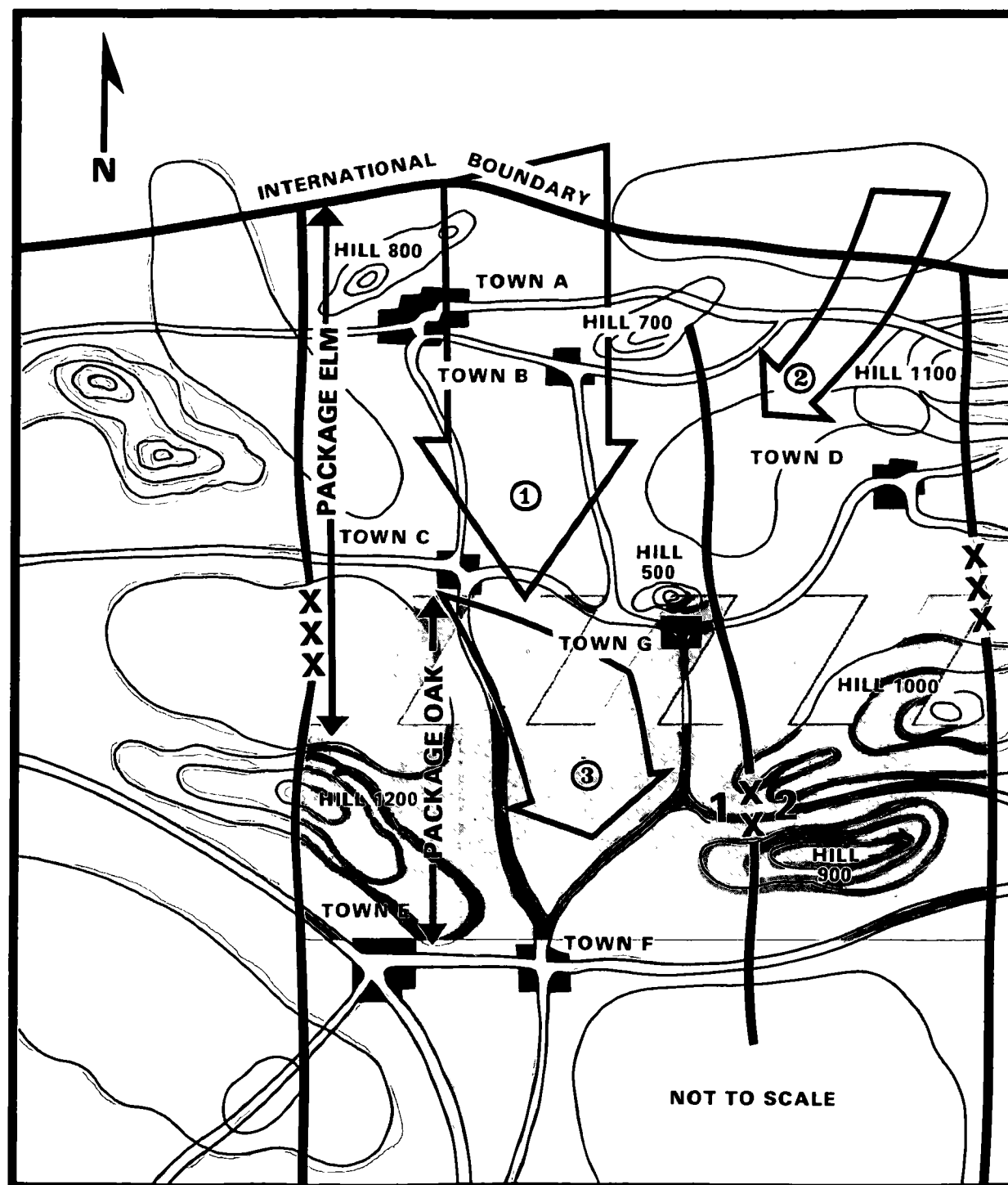
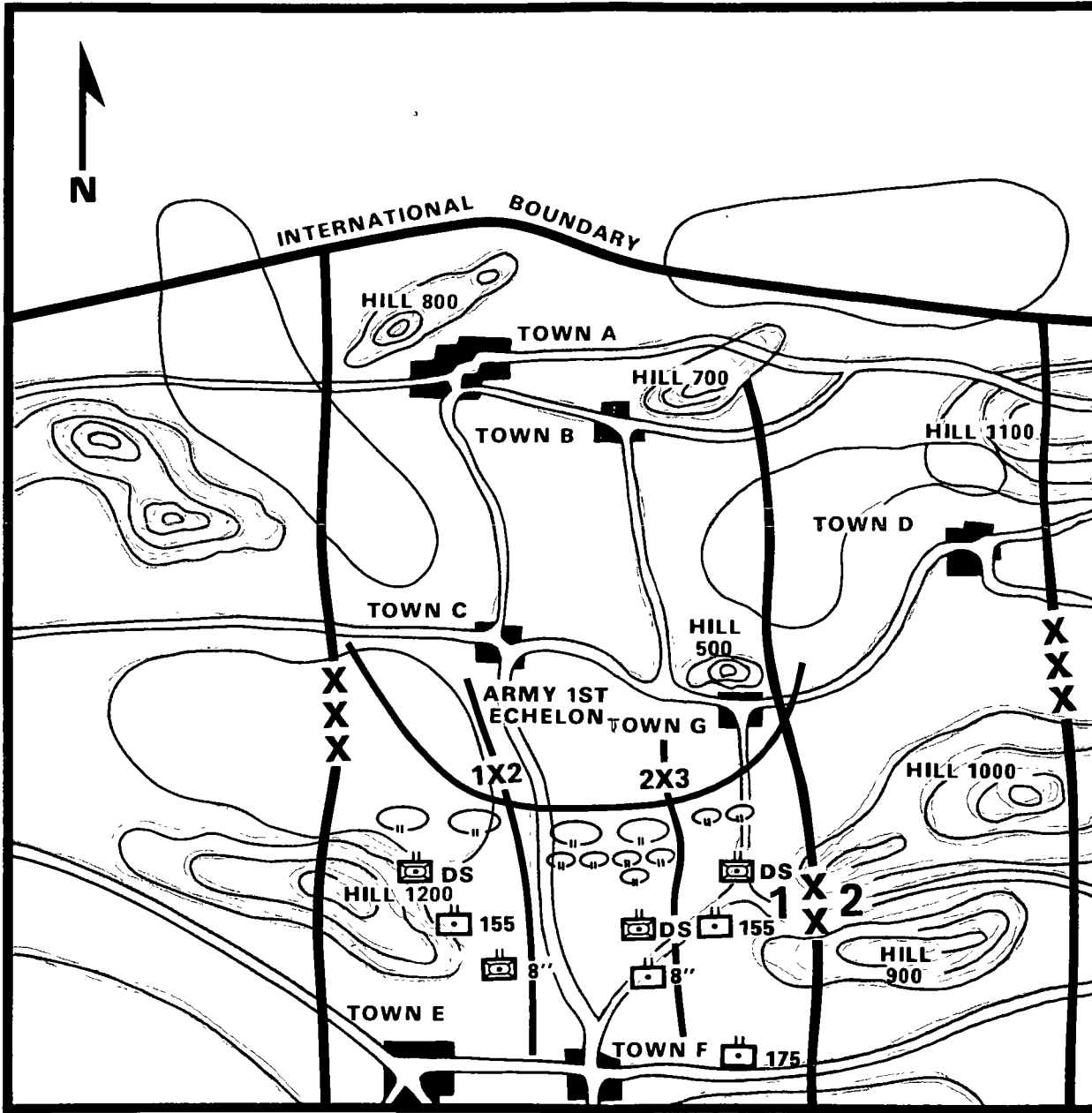


FIGURE 6-14. DEPLOYMENT AFTER SEVERAL DAYS OF FIGHTING.



Before the situation reached this point, the corps and division commanders and their staffs had been refining the nuclear packages for the developing tactical situation. Because of the mountainous terrain, the 2d Division was holding, and it was not anticipated that the enemy could make further gains without significant reinforcement. The 1st Division sector, with any enemy reinforcement, would become critical and the division probably could not hold. This could give the enemy a clear path to the corps rear area. The prospect of nuclear employment with emphasis on the 1st Division's sector was now first priority business.

The 1st Division commander gave the following guidance: [REDACTED]

"The corps commander and I are convinced that if nuclear use is required, it will be package ELM. Refine your aimpoints and weapon requirements on the basis of known and suspected enemy locations and our present firing positions.

"I want to pay particular attention to the approach along our east boundary. Some of the forces fighting the 2d Division could split off and hit us on our right flank. Be especially watchful for second echelon forces. A potential breakthrough point for them would be on our east side.

"Make no changes to the SOP in either target defeat or collateral damage preclusion criteria.

"Work closely with the corps staff on this and keep in touch with the 2d Division. Get back to me as soon as possible with your plan or any other guidance you might need. Time is getting short."

The critical tasks for the division staff concerning the division's subpackage were to:

- ☐ Refine known and likely locations for the forces in contact.
- ☐ Identify and locate any approaching second echelon forces.
- ☐ Refine aimpoints for attack.
- ☐ Reposition nuclear fire units and redistribute PNLs if necessary.
- ☐ Locate any sizable refugee centers and determine population status in Towns C and G.

The G3 coordinates the staff activities. In conjunction with the FSCOORD, he provides the staff an update on the current friendly situation and status of maneuver and fire support units.

The G2 has the primary responsibility to locate the enemy. He provides input to the G3 and FSCOORD from:

- ☐ The division CEWI battalion, which provides intelligence data gathered from divisional resources and the corps CEWI group. These are the most likely agencies to identify the approach of second echelon divisions.
- ☐ The G2 air (from both air and ground reconnaissance).
- ☐ The counterintelligence and interrogation element.
- ☐ The combat intelligence company.
- ☐ The special security office.
- ☐ The brigade S2s and the division artillery TOC.
- ☐ The corps G2/G3 operations section.

The G5 is responsible for providing the G3, G2, and FSCOORD:

- ☐ Any refugee information available for the planned target area.
- ☐ Information as to the civil affairs or psychological impact of the strike on Towns C and G.
- ☐ Updated information on the number of civilians in and around Towns C and G.

At this stage of an operation, however, the G2 may have more and better information on the civilian disposition than the G5.

The FSCOORD is responsible for:

- ☐ Target analysis.
- ☐ Moving aimpoints.
- ☐ Refining the weapon and yield, within constraints, for each aimpoint.
- ☐ Recommending substitution of one weapon for another, and making substitutions as necessary.
- ☐ Repositioning fire units as required.
- ☐ Recommending to the G3 repositioning of maneuver units or exceptions to troop safety requirements.
- ☐ Recommending changes to unit PNLs and reapportioning weapons as necessary.
- ☐ Precluding collateral damage as prescribed by the commander.
- ☐ Insuring proper nuclear release by firing units.
- ☐ Refining and recommending the timespan. The FSCOORD briefs the commander on possible alteration of the timespan on the basis of delivery unit availability, relocations, or changes in missions.

He accomplishes these tasks as follows:

- ☐ Refines the target information provided by the G2 into the most accurate target information.
- ☐ Directing the activities of the FSE and the NBCE, the FSCOORD refines each aimpoint for the appropriate weapon and yield. As required, the FSCOORD *coordinates directly with the:*
 - ☐ Corps FSE
 - ☐ Division artillery TOC
 - ☐ FA brigade
 - ☐ Brigade FSOs
 - ☐ FA battalion commanders
 - ☐ ALO/ANGLICO representatives
 - ☐ ADA officer
 - ☐ Engineer officer

This coordination is particularly critical in terms of smaller yield weapons near the FEBA. The confirmation of target locations close to the FEBA by the FSOs who have input from their FISTs can result in aimpoints that would insure maximum coverage of enemy units.

In this situation, the FSCOORD decided not to recommend repositioning any firing units or reapportioning the PNL. The current dispositions were sufficiently flexible to handle the situation. He also began coordinating with the ALO about the status of aircraft and weapons and with the corps FSCOORD concerning the Lance.

The FSCOORD coordinated the package refinements with the G2, G3, and the corps FSE. He also provided the FA battalions all possible information so they could:

- ☐ Begin nuclear weapon prefire operations as specified in appropriate system technical manuals.
- ☐ Perform any required survey and develop and maintain the latest meteorological and velocity error data.
- ☐ Precompute firing data.
- ☐ Select firing positions if necessary.

Fire unit commanders must be careful to avoid signature activities that would compromise our intentions to the enemy. The appearance must be business as usual.

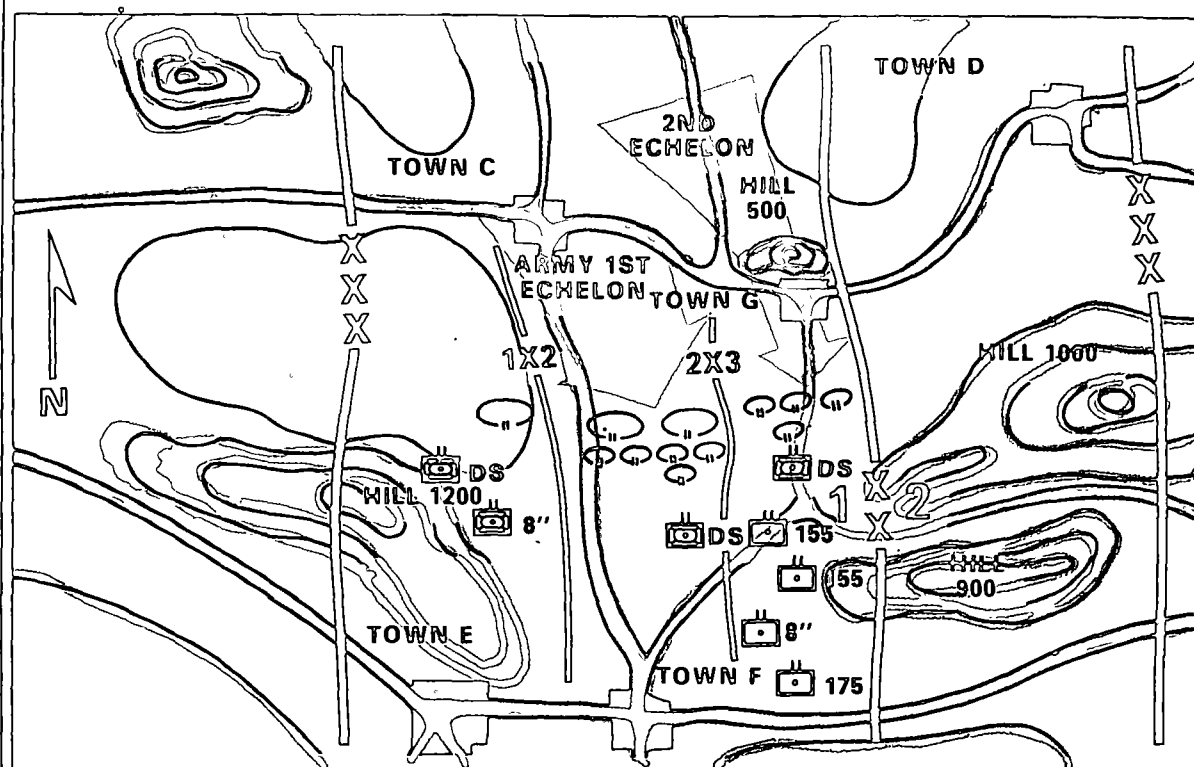
The commander was briefed on the refined package, and he approved it.

☐ **Nuclear Release and Use**

The commander received information from the corps and his own intelligence sources that fresh second echelon divisions were moving into the northeast part of the division sector. It appeared that their intention was to make a breakthrough in the division sector.

The corps commander requested release of package ELM. The commander gave this guidance to his staff:

FIGURE 6-15. CURRENT DEPLOYMENT.



NOT TO SCALE

"G2, concentrate your efforts on locating the second echelon divisions. Get what intelligence you can on their nuclear and chemical intentions. They know that those are the only ways we can stop them now. A combined chemical and nuclear attack against our nuclear-capable units might tip the balance in their favor.

"G3, we need more forces in the 3d Brigade area. With the light infantry brigade on Hill 1200, I think we can move one TF from the 1st Brigade to the 3d Brigade. Check with the corps G3 to see if we can use the armored cavalry regiment squadron that was in the covering force area in the 3d Brigade area.

"FSCOORD, continue to refine our nuclear package ELM. You will need to coordinate closely with the 2d Division. Many of our fires will be close to their boundary, and they will be firing when we are. I want maximum damage to the enemy we have stopped, and I want to stop the second echelon forces."

APPLICATIONS FOR THE USE OF NUCLEAR WEAPONS THE OFFENSE AND DEFENSE ARE SHOWN ABOVE.

PAGE 6-38 THE TIME FROM NUCLEAR RELEASE REQUEST TO PACKAGE USE IS A CRITICAL AND BUSY ONE FOR THE DIVISION FIRE SUPPORT COORDINATOR. HE MUST INSURE TOTAL COORDINATION OF NUMEROUS ACTIONS, SOME OF THESE KEY ACTIONS ARE.

- 12SUBPACKAGE REFINEMENT,
- REFINEMENT OF AIMPOINTS,
- REAPPORTIONMENT OF PNLs,
- TRANSPORTATION OF REAPPORTIONED WEAPONS TO APPROPRIATE BATTALION FSLs, AND
- COMMUNICATION OF NECESSARY RELEASE AND PREPARATION INFORMATION TO EACH FIRING UNIT.

THE TIME FROM NUCLEAR RELEASE REQUEST TO PACKAGE USE IS A CRITICAL AND BUSY ONE FOR THE DIVISION FSCOORD. HE MUST INSURE TOTAL COORDINATION OF NUMEROUS ACTIONS. SOME OF THESE KEY ACTIONS ARE.

The G3, coordinating with the FSCOORD, repositioned units. Corps released the armored cavalry regiment squadron, and it was positioned on the division right flank. One task force was taken from the 1st Brigade and put with the 3d Brigade. The FSCOORD repositioned FA units to place the bulk of the division artillery fires into the 2d Brigade and 3d Brigade sectors (fig 6-15).

The corps commander reapportioned eight 155-mm, five 8-inch, three Lance, and one air-delivered weapon from the 2d Division to the 1st Division. As the battle developed, the FSCOORD continually refined aimpoints while keeping a constant watch on PNLs.

The FSCOORD, coordinating with the G3 and as approved by the commander, adjusted the PNL distribution and insured that the weapons that the FA battalion would fire in the package were at the battalions' field storage locations (FSL). Some examples of how he accomplished this are:

- He ordered the DS FA battalion commander with the 1st Brigade to deliver three 155-mm/0.1 KT weapons to the 2d Brigade DS battalion by vehicle.
- He coordinated with the division support command (DISCOM) and the aviation officer and airlifted two 8-inch weapons from the 8-inch battalion in the 1st Brigade's sector to the 8-inch battalion in the 3d Brigade's sector.
- He directed the FA brigade commander to coordinate with the 2d Division FSE and had the 155-mm and 8-inch weapons reapportioned by the corps commander.
- He coordinated with the G3 for additional security forces to safeguard convoys.
- He coordinated with DISCOM for additional transportation, since he had insufficient organic assets.

As appropriate for the weapon system and on the basis of the commander's approval, the FSCOORD directed the FA battalion to begin prefire checks and weapon assembly.

Corps received approval to use package ELM. This was a critical and busy time for the FSCoord, FSE, division artillery TOC, FSO, and nuclear firing units. The sequence of events which followed the corps request for release is shown in figure 6-16.

Each firing unit must receive the release authority, aimpoint, yield, height of burst, and time-on-target in time for decoding. This is a time when responsive communications are critical. Some special considerations apply.

- ☐ The firing batteries in the DS battalions do not have RATT (radioteletypewriter) facilities. Accordingly, the battalion commander has to get nuclear firing information to the batteries by messenger, face-to-face meetings, secure voice, or fire mission codes.
- ☐ The FSCoord may use a combination of organic FM (frequency modulated) radios, RATT, wire, messengers, and the sole and common user multichannel systems.
- ☐ All the communications capabilities of the division artillery TOC and FA brigade must be exploited to provide alternate communications assets.

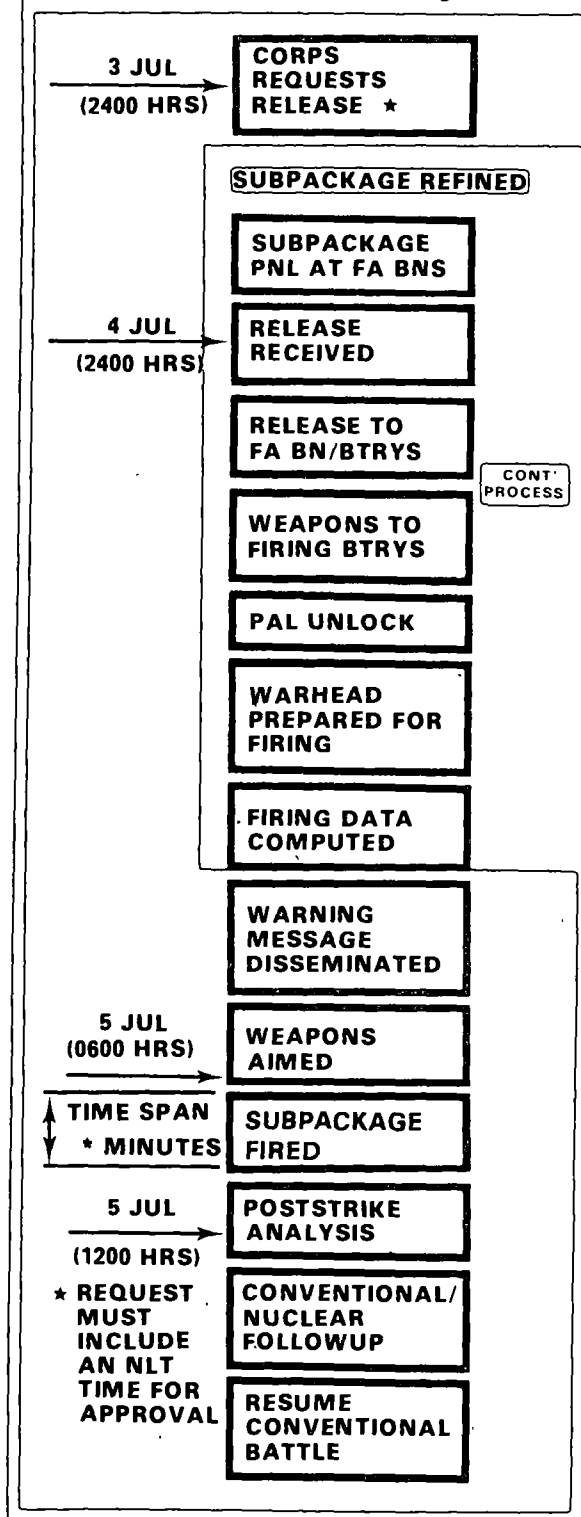
Final firing preparation included:

- ☐ Final weapon movement to the specified firing batteries,
- ☐ Permissive action link unlock,
- ☐ Assembly, and
- ☐ Fuzing.

Final firing data was computed and refined with the latest meteorological and muzzle velocity corrections for deflection, quadrant, and fuze settings. Final coordination was made with Air Force, Lance units, and the 2d Division.

Nonnuclear fires must continue at generally the same pace. Any noticeable slackening of nonnuclear fires, particularly indirect fires, or a significant increase in radio traffic can be a distinct tipoff to the enemy that a nuclear strike is imminent.

FIGURE 6-16. EVENTS FOLLOWING RELEASE REQUEST.



A half hour before the package began, the G3/G2 operations, FSE, and the division artillery TOC transmitted secure STRIKWARN messages through command channels. Units near the strike area made final preparations to take cover. Equipment was shielded, and all soldiers in the brigade areas covered exposed skin areas and anticipating a chemical strike, put on their protective masks. Commanders specified that certain electronic equipment be disconnected from antennas and power cables to prevent EMP damage. Critical communications and fire control equipment was dug in with overhead cover.

As the battle tempo increased, the 2d and 3d Brigades reported attack by lethal and incapacitating chemicals and heavy artillery fire. The field artillery battalions were beginning to come under heavy artillery fire and chemical attack. The G3 gave a quick synopsis of the situation:

- ☐ Nuclear fires must begin in a few minutes. This will require the dedicated use of the bulk of the indirect fire assets available to the division. At full strength, there would be 114 tubes to do this.
- ☐ The division is under chemical attack. We should retaliate.
- ☐ Our defensive positions are receiving heavy indirect fire.
- ☐ Close support fire requests are increasing in the 2d Brigade and 3d Brigade sectors.
- ☐ At best, we can expect to maintain air parity. Accordingly, a large increase in CAS could not be anticipated.

The division commander established these priorities:

"The first priority is to fire the nuclear package as directed by the corps. We must dramatically change the tactical situation.

"The second priority is the counterfire program. This will

take the pressure off maneuver and fire support units and degrade the enemy nuclear and chemical capability.

"The third priority is close support."

He further indicated that the corps commander had requested chemical release. On the basis of the division commander's priorities, the division artillery commander:

- Decided to manage execution of the division's portion of the nuclear package himself. This was the most critical task to be performed.
- Tasked the FA brigade to manage counterfire using those weapons not involved in firing the package.
- Directed that brigade and battalion FSOs manage close support fires. FISTs would get close support fires as they were available.

The division artillery commander directed the FA battalions to shift their fires to counterfire and close support when they finished their part of the nuclear package. The FSCOORD, main FSE, and NBCE continued refinement of the chemical plan. Working through the ALO and the TACP, the FSCOORD used Air Force reconnaissance aircraft for deeper poststrike damage information after the package was fired. All maneuver and fire support target acquisition means were directed toward determining the enemy's status.

The commander must determine the results of the nuclear strike quickly because:

- He still may not be able to defend successfully; it may be necessary to request and fire another package;
- He may have to react quickly to take advantage of nuclear effects.

6-8. Summary

A broad perspective of the battlefield as presented in the offense, defense, and nuclear and chemical operations chapters of this manual indicates two significant things: 1) conducting operations in both a nuclear and chemical environment will stretch all the assets available to the commander to the limit; 2) the bulk of the fire support systems that provide nonnuclear fires will be providing either chemical or nuclear fires, or both.

These facts drive home the absolute criticality for the commander and his FSCOORD to work together continuously from the moment a mission is assigned or assumed until the battle is won.





Training Fire Support Planners and Coordinators

*The Romans are sure of victory—for
their exercises are battles without
bloodshed, and their battles are
bloody exercises.*

— Josephus, 37-100 A.D.

WHY

- At all levels, FSCORDs and their respective sections provide the *vital* link between the fire support system and maneuver elements. High proficiency of these individuals and sections is *essential* to the effectiveness of the combined arms team.

WHAT

- This chapter tells you:
 - how the training management system works;
 - who is responsible for fire support training;
 - what training tools are available; and
 - how fire support personnel are trained.

7-1. A Unique Training Challenge

The Army's basic purpose is to win battles. Although we cannot accurately foresee the time or place of battle, we must be prepared to fight a well-armed enemy, superior in number. We cannot rely on a long mobilization or a lengthy war. Rather, we must prepare to react rapidly for intense combat in which there are severe penalties for poor weapon employment. No weapon can be effective unless the man behind it is well motivated and trained. Each of our weapon systems must be skillfully employed by competent tactical leaders. Ultimately, the Army's effectiveness will depend on our ability to field powerful weapons in the hands of soldiers proficient in their use and under leaders skilled in their employment.

The role of fire support planners and coordinators is perhaps the most critical aspect of the vital interface between maneuver and fire support units. Yet, how to train these planners and coordinators so that the interface works at peak efficiency has always been fuzzy. Who is responsible? How, when, and where should training be done? Artillerymen have long been known for their technical expertise in computing data required to get steel on target. They traditionally achieve high degrees of competence in operating their weapon systems. Standards in fire direction centers and firing batteries must remain high;

however, success on the battlefield of today requires more. If the combined arms team is to function as a team, fire support planning and coordination training must receive a great deal more attention. FSEs are small and often overlooked in training programs. These FSEs consist of officers, NCOs, and soldiers who must train as a team and with maneuver forces if readiness is to be achieved. Fire support planning and coordination demands a great deal of skill and therefore requires judicious application of training techniques. The effective integration of fire support and maneuver is too important—and too difficult—to assume that it will work by itself. *It will not.*

The critical maneuver fire support interface is further threatened by certain new factors that exist on the battlefield as depicted in FM 100-5. The fire support system could be completely paralyzed unless special attention is given during training to electronic warfare, rapid movement, intelligence, and target prioritization when the fire support system is saturated. Let us examine each in turn.

☐ **Electronic Warfare**

Extensive military use of the electromagnetic spectrum has added a new dimension to the battlefield. Combat power is of little consequence unless it can be brought to bear *quickly* at the critical place. Accordingly, command and control systems, weapon systems, and acquisition systems are prime EW targets. Communication links between fire support coordinators and firing batteries are delicate at best. Unless adequate preparation is made during training, communication in an EW environment is nearly impossible—especially on a fluid, fast-moving battlefield where wire communications will be almost nonexistent. Besides jamming, our units will encounter saturated radio nets—most often in critical areas of the battlefield where units are massed to prevent breakthroughs or to

initiate counterattacks. The key to coping on the battlefield is dealing with these problems beforehand—in training exercises planned with imagination and realism.

☐ **Movement**

Execution of a viable active defense and the massing concentration needed for counterattacks require a great deal of skill on the part of all units involved. To fire support personnel this means moving often with little notice, it means operating from multiple map sheets, and it means keeping track of friendly unit location to a degree never experienced before. Once again, the solution lies in training. Just as with communications, we must train as we fight if we are to succeed.

☐ **Intelligence**

The hardware, organizations, and procedures being developed for intelligence gathering may actually degrade the effectiveness of the fire support system unless handled properly. Fire support personnel must sort out the intelligence data and fire upon the more critical targets. With the new intelligence system, it is possible to become inundated with information. Unless we train to make evaluations promptly and make target attack decisions rapidly, we will be ill-prepared to cope with the "real thing." Intelligence processing has not received much emphasis in the past; however, on today's battlefield we cannot afford to become paralyzed by large volumes of information.

☐ **Target Prioritization and Attack**

In the future, we must be prepared to fight outnumbered—outnumbered in men, weapon systems, and organizations. This means we must make the very best use of what we have. As the tempo of battle increases, our fire support system will become saturated with targets. The practice of shooting all targets in turn must be scrapped. This will be difficult

for veterans of earlier wars in which we used a "when in doubt, shoot" policy. The battlefield dictates that we use a target priority system. Commanders must establish priorities based on the tactical situation. FSCOORDs and operations officers must insure that targets are attacked accordingly. Weapon systems must be used expeditiously to avoid wasting critical time and valuable ammunition. FIST members should expect to simultaneously employ mortars, field artillery, and close air support. The key to doing all this under the pressure of combat is to introduce fire support personnel to Clauswitz' "Frictions of War;" that is, anticipate and address unexpected problems *before the battle*. The stage for combat must be set over and over again in the training area.

This paragraph has stressed the differences between the battlefield on which we are likely to fight and the battlefield of the past. Our training must adapt to this new battlefield. It must not simply deal with gunnery, cannoneers hop, and adjustment of artillery fire. Now we must place equal emphasis on such things as electronic warfare, rapid displacement, massive amounts of intelligence data, and saturation

of target servicing capabilities. Otherwise, the fire support system can be rendered ineffective. The traditional way of training—en masse at a pace equal to that of the slowest learner, with heavy reliance on OJT (on-the-job training)—will not work. We are training a highly specialized force—the entire fire support team. To make the fire support system work, some new approaches are essential. The remainder of this chapter discusses the training of fire support planners and coordinators.

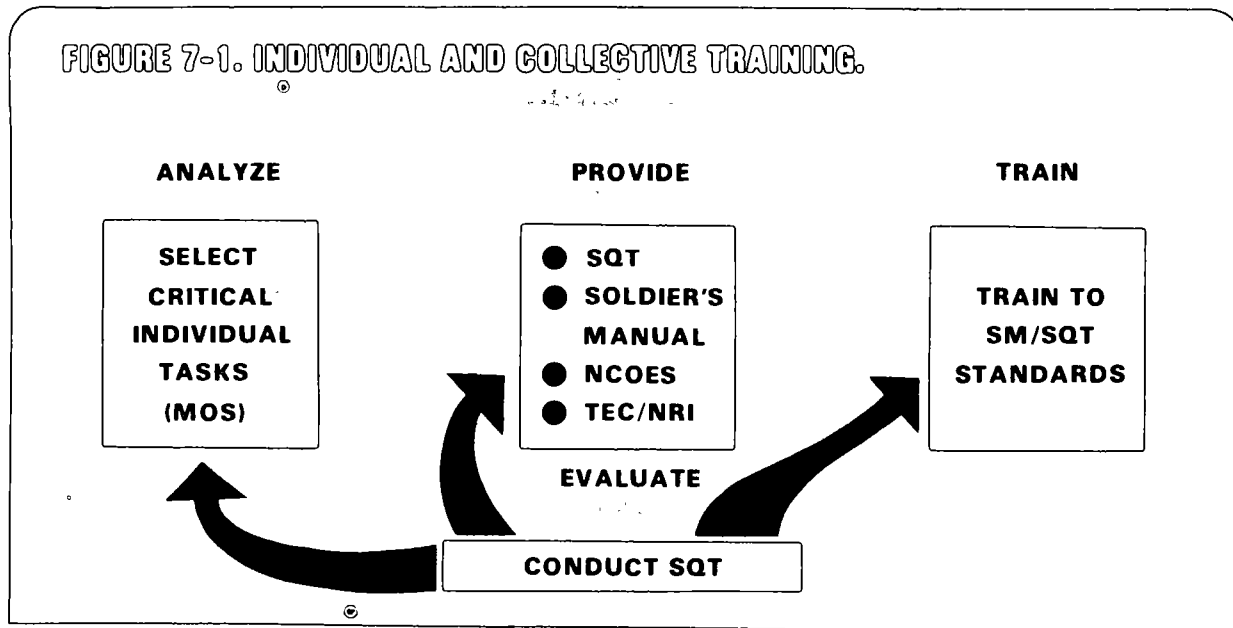
7-2. The Concept of Training

The basic concept for training any soldier has two simple points:

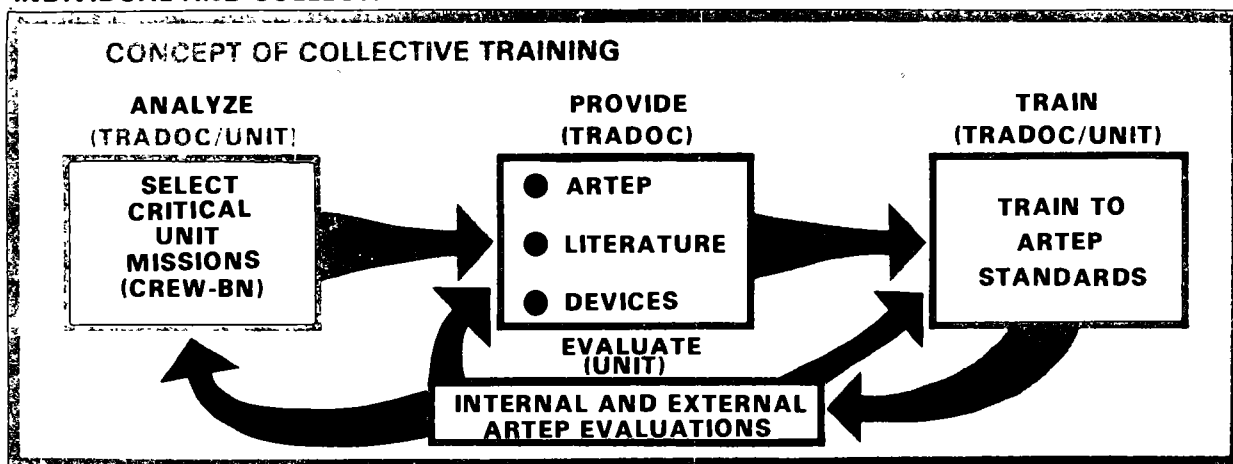
- ☐ Define what he should know.
- ☐ Give him the resources to train.

The Army training management system, as outlined in TC 21-5-7, *Training Management in Battalions*, is the framework used to accomplish these two points. The training management system is responsive to both individual and collective training requirements. The system is graphically depicted in the two models shown in figure 7-1.

FIGURE 7-1. INDIVIDUAL AND COLLECTIVE TRAINING.



INDIVIDUAL AND COLLECTIVE TRAINING. CONTINUED



Training management is a continuous process to evaluate proficiency, determine training requirements, provide resources, and train. When a new mission is received, when there are significant personnel changes, or when an evaluation reveals additional training is required, unit training must be adjusted.

Individual training for fire support coordination personnel can be difficult. This is caused by the sometimes "orphan," sometimes "forgotten" status of these people buried in larger organizational structures. The solution is decentralization. Fire support officers must impose self-discipline to maintain sufficient up-to-date knowledge and proficiency in their jobs. The officers must insure that NCOs are motivated and stay current. The NCOs must train soldiers in the chain using the soldier's manual that explains what to train at specific standards and where to find support training material for each task at each level within each MOS. Individual training in units has these characteristics:

- ☐ Decentralized to the firstline supervisor.
- ☐ Tailored for each soldier.
- ☐ Self-paced using TEC, correspondence courses, and GED.

- ☐ Targeted on job performance and MOS qualification.
- ☐ Need not be scheduled, but can take place almost any time and anywhere.

The Army training and evaluation program (ARTEP) is as critical to collective training as the soldier's manual is to individual training. The ARTEP states the tasks, conditions, and standards for fire support coordination teams and sections. Each leader must know exactly what his ARTEP tasks are and be charged with training to accomplish those tasks, under conditions at least as difficult as those listed and to the standards prescribed. Besides using the ARTEP to plan training, trainers should use the ARTEP to evaluate and diagnose unit strengths and weaknesses.

When planning decentralized, collective training for the fire support coordination chain, caution must be used. The decentralization concept is valid for collective training, but commanders (training managers) must continually stay in the net. A unit will not magically become well trained just because training responsibility is dumped down to the lowest level. FIST chiefs and FSOs may not have an adequate foundation or the experience to allow them to be totally aware of all the important

requirements for training their people. They often need help and clear guidance (training management) to insure emphasis is placed on the appropriate training objectives. This critical judgment can be given only by experienced officers and NCOs. This aspect must be intensively managed, since it changes as often as the people change in a unit.

7-3. Training Responsibilities: Managers and Trainers

Training managers employ resources and develop training programs; trainers prepare and train. They both evaluate training. The training of fire support planners and coordinators, however, is not quite that simple. Table 7-1 shows where all participants fit into the training scheme—some wear several training hats! FA battalion and division artillery commanders, as FSCOORDs, must get actively involved in fire support planning and coordination training.

7-4. Training Tools and Resources

Training managers and trainers of fire support planners/coordinators have several tools at their disposal. The tools are used for analyzing, training, and evaluating and provide the basis for allocating resources. In our limited-resource environment, making maximum use of the tools is a *must*. We must be well versed in what they offer before training with service ammunition and conducting field training exercises (FTX). The benefit derived from live fire combined arms exercises will increase *manyfold* if we use these tools to prepare beforehand.

□ Soldier's Manual (SM)

The SM is a field manual for the individual soldier that defines for him in "real world terms" what the Army requires him to know and do throughout his career in his MOS. SMs provide individual tasks, conditions, standards, and the references that apply. For example, each soldier assigned to a FIST will receive an SM that tells him what he must know and do for his particular skill level in MOS 13F.

TABLE 7-1. FIRE SUPPORT TRAINING RESPONSIBILITIES

Pers or Sec to be Trained	FIST Pers	FIST Chief	Mvr Bn and Bde FSE Pers	Mvr Bn and Bde FSO	FA Bn Cdr Div FSE Pers
Tnr	FIST Chief	FSO	FSO	FA Bn S3	Asst FSCOORD
Tng Mgr	FA Bn Cdr	FA Bn Cdr	FA Bn Cdr	FA Bn Cdr	Div Arty FA Bde Cdr

☐ **Commander's Manual (CM)**

The CM provides a complete list of critical tasks for each MOS from skill level 1 to 4. The list identifies tasks, gives references, and indicates where a soldier is trained for the task. CMs are an invaluable aid for both trainers and managers.

☐ **Skill Qualification Test (SQT)**

The SQT determines the soldier's proficiency at his current skill level and his qualifications for advancement to the next higher skill level. The SQT emphasizes hands-on performance rather than written tests. Using SQT results, the training manager and trainer can determine individual training weaknesses.

☐ **Training Extension Courses (TEC)**

TEC lessons train soldiers in common, branch-related, or MOS-related subjects. They allow soldiers to study alone, at individual speed, or with a group who have the same training needs.

For example, the soldier in MOS 13F can brush up on the "Establish Commo" task by studying TEC Lessons 936-061-0108-F through 936-061-0114-F.

With TEC, soldiers—as well as NCOs and officers—can study those lessons and develop proficiency in a particular area. All TEC lessons are provided to units by direct distribution.

☐ **Army Training and Evaluation Programs**

ARTEPs are geared toward section or unit training rather than individual training. They are not merely substitutes for Army training programs (ATP), Army training tests (ATT), or operational readiness training tests (ORTT). They are not tests to pass or fail. There is no inherent requirement for an annual formal evaluation. However, this may be directed by a particular commander.

FA ARTEPs are the *primary* diagnostic training tools for battery, battalion, and div arty fire support coordination training. They are blueprints used to identify shortcomings, structure training, and monitor and evaluate progress.

Training Tip

The new user of the FA battalion ARTEP should immediately distinguish between section outlines (e.g., bn/bde fire support section) and major mission operation outlines (e.g., battalion fire support coordination).

Section outlines include tasks that individual sections can use to train—usually *independently*.

Major mission outlines include tasks for the entire unit (e.g., the battalion).

Brigade and battalion fire support sections should be able to plan and coordinate fire support for maneuver battalions or brigades in the defense—under the conditions and to the standards set forth in ARTEP 6-365, *Field Artillery, 155-mm SP, Direct Support Cannon Units*, or in ARTEP 6-105, *Field Artillery, 105-mm, Direct Support Cannon Units*.

The ARTEP provides the means of evaluating unit proficiency according to specific combat mission-related, performance-oriented training objectives. When performance is evaluated, training weaknesses are isolated and training managers develop training programs to correct deficiencies. Evaluation is continuous, and this "closed loop" process is critical to maintaining a stable, high level of readiness. Training emphasis must be placed on informal evaluations on a continuous, day-to-day basis—not on formal annual testing at predetermined dates.

The importance of continuous training that maintains fighting proficiency cannot be overemphasized. Tests have proved that the average battalion will degrade in training proficiency by at least 25 percent within 3 months after a major training exercise—unless collective skills are maintained in garrison and local training areas. A battalion at 75-percent proficiency most likely will be unable to adequately perform its combat mission.

☐ **Service School Instructional Material**

USAFAS publishes two catalogs that contain training material on fire support subjects that pertain to both maneuver and field artillery personnel.

Significant aspects of the FA Catalog of Instructional Material:

- ☐ There is a series of available individual, section, staff, unit, or MOS-related courses. Subject matter includes communications and electronics, counterfire, gunnery, tactics and combined arms, and weapons.
- ☐ There is a series of programed texts on specific subjects; for example, map reading, observed fire procedures, and offensive and defensive maneuvers that can be used to supplement training.
- ☐ There are approximately 200 "How To" TV tapes available that discuss, for example, adjustment of FA and mortar fire, radiotelephone operator (RATELO) procedures, and FA tactical missions.

Significant aspect of the Correspondence Course Catalog:

- ☐ Professional development courses are available for officers and NCOs. These include the officers basic and advanced courses, nuclear target analysis, NCO cannon and missile basic and advanced courses, and various specialty courses.

☐ **Training and Audiovisual Support Center (TASC)**

TASC can provide the training manager and the trainer all types of audiovisual aids, graphic training aids, training devices, training room support items, and training equipment. For example, gridded templates can be obtained from TASC. Each TASC publishes a catalog that tells what is available and how to get it.

☐ **Devices and Simulators**

Simulators and devices augment training. Use of full TOE equipment and live firing is desirable but not always possible. Available training areas, ammunition shortages, and monetary constraints force the commander to other alternatives. Simulators and devices can *replace* some live fire field training, compensate for constraints, and supplement available live training periods. The training manager/trainer determines the best mix of live training and simulation.

The M31 (14.5-mm) field artillery trainer provides realistic training for fire direction teams, forward observers, guncrews, and survey teams in limited space and at low cost. The M31 is effective for diagnosing training weaknesses and developing teamwork and technical proficiency *before* firing service ammunition.

☐ **War Games**

While they are maneuver-oriented, war games do provide the commander and his FSCOORD an excellent opportunity to train together. Used with command post exercises (CPX), with FTXs, or by one commander and his FSCOORD against another commander and his FSCOORD, war-gaming can realistically exercise the techniques of integrating maneuver and fire support. The complete spectrum of command and control procedures can be practiced, which significantly enhances combined arms training. These war games are available as shown in table 7-2.

Title	Level of Play	Scenario	Training Objectives
FIREFIGHT	US Platoon vs Opponent Company	Free tactical play in European setting/ terrain.	Trains platoon leaders and FIST members to: 1. Use long-range direct and indirect-fire weapons. 2. Use terrain properly. 3. Use suppression and smoke. 4. Fight the combined arms team.
TABLE 7-2. AVAILABLE WARGAMES			
DUNN-KEMPF	US Company Team vs Opponent Motorized Rifle Battalion	1. Free tactical play. 2. Players choice of offense or defense. 3. Terrain is rolling with vegetation.	Trains company team leaders and FIST members to: 1. Apply small unit tactics. 2. Apply maneuver and fire support techniques. 3. Use terrain properly. 4. Employ the weapon systems available to the company. 5. Develop hasty fire plans and use suppression and massed fires.
LONGTHRUST	US Battalion vs Opponent Reconnaissance Battalion	Free tactical play for the attack or defense in European setting.	Trains task force command group and FSO to: 1. Use time/distance factors. 2. Use terrain properly. 3. Employ direct and indirect-fire weapon systems. 4. Use command and control procedures. 5. Develop fire plans and coordinate fires.
COMPUTER- ASSISTED MAP MANEUVER SYSTEMS (CAMMS)	US Brigade or Battalion vs Opponent Division or Regiment	Free tactical play on any terrain for inf, mech, cav, or armor offense or defense operations.	Trains task force and brigade com- mand groups and FSOs to: 1. Use command and control techniques.

Title	Level of Play	Scenario	Training Objectives
			2. Fight various tactical scenarios. 3. Coordinate and control the combined arms team.
TABLE 7-2. AVAILABLE WARGAMES—CONTINUED			
			4. Plan and coordinate direct and indirect fires. 5. Apply administrative and logistic support to combat operations.
PEGASUS	US Brigade vs Opponent Motorized Rifle Regiment	Free tactical play on rolling terrain.	Trains the brigade command group and FSO to: 1. Use proper command and control procedures. 2. Understand time/distance factors. 3. Plan fires and integrate fire support with maneuver.
FIRST BATTLE	US Mech/Armored Division vs Opponent Tank Army	Free tactical play involving a division defense along German border.	Trains division command and FSCORD to: 1. Coordinate and control combined arms operations. 2. Employ the critical time/distance decisionmaking process. 3. Use fire support planning and coordination.
BROADSWORD	US Division vs Opponent Combined Arms Army	Free tactical play in any terrain for inf, mech, armor, or air (offense/defense operations).	1. Use command and control techniques. 2. Plan and coordinate conventional direct/indirect fires. 3. Apply administrative and logistic support to combat operations. 4. Employ target acquisition assets in the division zone. 5. Plan and coordinate nuclear fires from corps through battalion.

Other devices and simulators will be available in the future. They are described in chapter 8.

A recent Armywide survey indicated that no matter how the question "What can provide a remedy for problems of motivation, morale, and job satisfaction for you (the soldier)?" was asked, the overwhelming *mandate* was **"Give us Meaningful Training!"** The tools that were addressed in this paragraph are provided to meet this mandate.

In no other profession are the penalties for employing untrained personnel so appalling or so irrevocable as in the military.

— GEN Douglas MacArthur, 1933

7-5. The FIST Chief as the Trainer

The FIST chief is the full-time trainer of his team. His responsibilities include both the individual and collective training of that team. As the trainer of his team, it is essential that the FIST chief have a complete understanding of how to use the training tools available.

For example, assume that a FIST chief has determined that his forward observers (FO) need training in locating targets within required standards of accuracy. This was determined by their performance on recent FTXs and an analysis of the results of this task on their SQTs. Aware that accurate location of targets is a critical task that affects the efficiency of his team's mission, the FIST chief realizes the importance of designing a training plan to solve his problem.

The FIST chief is already well into the four-step training management process as outlined in figure 7-1. He has evaluated the state of training of his FOs in a particular area and is presently analyzing a solution for it.

Using the unit ARTEP 6-365, he turns to the tasks for the FIST. There is a listing of the critical tasks required of an FO in combat. Task 2 is locating targets. The conditions under which the task is performed and the standards required are also listed. The FIST chief knows that all adjustment-of-fire tasks carry with them the implicit task of locating targets to the proper standard. The fire mission times in the field artillery and/or battalion delivery of fires sections depend on the location standard being met.

Using FM 6-13F 1/2, the soldier's manual for MOS 13F, the FIST chief finds that tasks 061-281-1002 through 061-283-1004 state the three methods of locating a target, how to train to do the tasks, the required standards, and the needed references for detailed information on each task. If a soldier's manual is not available, then the FIST chief might check the commander's manual, FM 6-13F CM. This contains a listing of tasks, references, and responsibility/location for initial training for a task.

Either of these sources will mention, as additional references, TEC lessons 949-061-0001-F through 949-061-0003-F and specific chapters in FM 6-30.

For they had learned that true safety was to be found in long previous training, and not in eloquent exhortation uttered when they were going into action.

— Thucydides, 418 B.C.

The trainer has a variety of devices/simulators (e.g., M31 trainer), service school instructional material, and items TASC can provide to assist him in training.

A sample training plan that the FIST chief might use is shown below.

Subject	Personnel
Read, understand, and know the tasks in ARTEP, SM, and SQT.	team
Do TEC Lessons 949-061-0001 (0002, 0003)-F	individual
Do a map/terrain association exercise.	team
Read, discuss, and understand appropriate chapters in FM 6-30.	team
Study and work problems available from service school instruction	individual
Do a map/terrain association exercise.	team
Fire with the M31 trainer.	team
TX.	team

Completing the training management circle, the DS battalion commander, as the training manager, provides the necessary equipment, references, time, guidance, and assistance. The FIST chief then vigorously trains his team. When his training is completed, he reevaluates the team's skill in locating targets and modifies the training as necessary.

7-6. The FSCOORD and the Maneuver Commander

The training that fire support personnel must do goes beyond developing the mere technical ability to perform such tasks as constructing overlays, planning targets, and

coordinating fires. Fire support personnel must learn to work with maneuver elements, and maneuver commanders must be trained to consider fire support at all times in their planning process. This is a team effort undertaken in the spirit of cooperation.

The following discussion will cover the FSCOORD and his commander at the company team, task force, brigade, and division. The purpose is to suggest methods for training the users and operators of the fire support system that will ultimately improve combat effectiveness and readiness. All FSCOORDs, regardless of their level, apply the same fire support planning and coordination principles. Their contribution, integrated with maneuver, is what generates combat power.

There are two categories of training involving the FSCOORD.

- ☐ **Technical** (covered earlier), which means proficiency in fire support procedures and techniques—the FIST can adjust fires or the FSO can develop a fire support plan.
- ☐ **Tactical** (coordination), which means proficiency in providing the right fire support system or systems and working with maneuver to integrate fire support with the action on the ground.

It is not sufficient for the FSCOORD to be only technically proficient. He must develop the interpersonal relationships with the commander, his staff, and the representatives from all fire support systems to make fire support an integral part of combat power. Training should be combined arms, when practical. The FSCOORD cannot do this without the cooperation and understanding of the maneuver commander.

☐ The FIST Chief and Company Team Commander

The relationship established between the FIST chief and his company team commander is one of the most critical on the battlefield. It is at this level that both direct

and indirect fires are placed on the opponent. The FIST is the "business end" of close support for maneuver. Training for this begins with the FIST always being with the company team during their training. The FIST chief insures that this happens—the company team commander insists on it.

The FIST chief is the trainer for his team. The battalion commander is his training manager. As the trainer, the FIST chief insures the individual and collective proficiency of the team. To provide both technical and tactical proficiency for the individual soldier, he uses the critical tasks in Soldier's Manual 6-13F. For a guide to collective training, he uses the ARTEP. The principal issues of this chapter revolve around the ARTEP critical tasks that combine the collective training requirements for integrating fire support and maneuver—tactical (coordination) proficiency.

FIST Critical Training Tasks. The following are representative tasks taken from ARTEP 6-365:

- ☐ Conduct immediate smoke and suppression missions.
- ☐ Adjust two fire missions simultaneously.
- ☐ Request and adjust immediate or planned CAS.
- ☐ Plan and coordinate close support for the company team in the offense and defense.
- ☐ Advise the commander on employment of fire support weapon systems.
- ☐ Determine the best fire support means to employ against a target.

Training. The first two critical tasks are ones that the FIST chief can train his team to proficiency on without interface with maneuver being mandatory. The earlier example of the FIST chief training his FOs to locate targets is a proper approach to these tasks. However, to perform the last four tasks, the FIST must train with the commander, maneuver platoon leaders, mortar platoon leader, and other fire support means representatives as available. There

are four fundamental ways to conduct meaningful training with all of these personnel: war games, CPXs, TEWTs, and FTXs.

War games can be used to plan and prepare for CPXs and FTXs. This allows mistakes without wasting valuable training dollars and time in the field. The results can be measured in terms of the relationships, confidence, and mutual cooperation between the FIST, the attack helicopter platoon leader, CAS and naval personnel, the mortar platoon leader, and the company team commander.

The DUNN-KEMPF war game is a good way to get all members of the team technically and tactically proficient. This is done without the expense of live firing and on-the-ground maneuver. All FIST fire support planning and coordination critical ARTEP tasks can be exercised. For example, during the war game, the company team commander requests advice for employing fire support weapon systems for a defensive operation. To perform this task, the FIST chief must know:

- ☐ weapon availability,
- ☐ who to coordinate with to get fires,
- ☐ the suitability of a weapon to attack a target, and
- ☐ how to combine the effects of multiple systems employed on the same target.

Coordination with FSOs and FDCs can be done through normal tactical communications established as part of the game play. Mortar availability is determined from the mortar platoon leader, either face to face or through tactical communications. CAS and attack helicopter support can also be simulated. Combining the maneuver and fire support ARTEP critical tasks in a hard-hitting, two-sided war game played against an actual or anticipated situation is an excellent way for the fire support and maneuver team members to:

- ☐ learn the critical combat tasks required for both,

- determine how each interacts with the other, and
- develop the coordination required to fight as a team.

Using the FIREFIGHT war game, the FIST chief and a maneuver platoon leader could engage another platoon leader and a FIST member to determine how best to make a platoon attack integrated with the fire support available to the company team. This would give both platoon leaders the opportunity to integrate fire support into their operation and would give the FIST the opportunity to become familiar with platoon tactics and how the platoon leaders operate.

CPXs might be the next step in this training process. They are used to refine the command, control, and communications procedures. These exercises offer a realistic interchange between all the maneuver and fire support personnel mentioned above with the problems inherent in a tactical environment (time-distance problems and communications problems). The CPX is an effective vehicle to teach the commander and his staff how to operate together without using troops as their training aids. While war games could be an integral part of these exercises, the CPX is better because the FSO can use his real equipment and interact with the proper personnel in a tactical configuration.

TEWTs (tactical exercises without troops) represent a progression from CPXs and are excellent preludes to FTXs. During a TEWT, the disposition and movement of simulated troops and units are planned and discussed on a particular piece of ground. In many respects, a TEWT is a "skeleton FTX" used to train combined arms groups of maneuver and fire support leaders to make decisions based upon their analysis of the terrain, the unit mission, and the opponent situation. On foot or in vehicles, the leaders at virtually any echelon—from crew/squad through battalion/task force and higher—can be trained extensively in command,

control, and communications procedures; consideration of time-distance factors; terrain analysis and navigation; reconnaissance, selection, and organization of positions; issuing orders; and thinking through tactical estimates, troops leading procedures, and fire support planning and coordination requirements.

A TEWT is relatively easy to prepare and can be exercised over almost any type of terrain. It can be conducted during prime time training or while the soldiers and junior leaders are involved in individual training or performing maintenance. A decided advantage of the TEWT is that it can be done in a local training area; and the absence of troops during the exercise permits a great deal more time for training maneuver and fire support leaders while being less demanding than an FTX in terms of resources required.

FTXs should start where war gaming, CPXs, and TEWTs leave off. This is the opportunity for the commander to use the ARTEP to evaluate proficiency and determine what weak areas still exist. Problem areas discovered on the FTX can be resolved back in garrison or in the field using a war game and CPX or a TEWT to refine techniques and coordination skills that were identified as weak.

The FTX offers the same valuable teaching points as a CPX or a TEWT, but the FTX intensifies the "sense of urgency" because of the presence of troops and live ammunition. The FTX is a most effective way to train the combined arms team.

The DS battalion commander, the FIST training manager, must informally evaluate these training sessions. He will provide specific training objectives and guidance to the FIST chief. He may provide recommendations to the company team commander on the better integration of fire support and maneuver and recommendations to the task force commander regarding the integration of the company war games with battalion gaming. This will provide both commanders

and their FSCOODs the opportunity to see the total team in action. This can all be done in an area the size of an average dayroom.

☐ **The FSO and the Maneuver Commander**

The FSO, as the FSCOOD at battalion and brigade, contributes to the close support fires provided by the FIST and adds to the battle the aspects of counterfire and suppression of enemy air defenses. He is the commander's fire support adviser, and he plans and coordinates all the fire support available to the command. He uses the ARTEP and Soldier's Manual 6-13F as the basis for his training. The battalion FSO is the trainer for his section, and the brigade FSO is the trainer for his. The DS battalion commander manages their training.

FSO Critical Training Tasks. The following are representative tasks from ARTEP 6-365:

- ☐ Plan and coordinate fire support for the offense and defense.
- ☐ Coordinate all fire support on surface targets.
- ☐ Plan and coordinate CAS and naval gunfire.
- ☐ Advise the commander on all friendly and enemy fire support capabilities.
- ☐ Advise the commander on target acquisition matters.

Training. The FSO has the dual responsibilities of training his section in their specific duties and training the section to interact with maneuver in its combat mission. The handling of the first responsibility is similar to the earlier example of the FIST chief and his FOs. However, to fulfill the second responsibility, the FSO must train with the maneuver commander, his staff, and representatives from all fire support weapon systems. Basically, the four ways to conduct constructive training, as for the FIST chief, are war games, CPXs, TEWTs, and FTXs.

War games include the LONGTHRUST war game, which allows all team members to exercise a tactical scenario in real time with a high degree of resolution. All of the critical training tasks required of the FSO can be played. For example, if the task force commander requested advice on how to plan targets for a hasty attack, the FSO would base his answer on coordination with:

- ☐ his FIST chiefs;
- ☐ the brigade FSO;
- ☐ the task force S2, S3, and S3 air;
- ☐ the DS battalion FDC; and
- ☐ the ALO and other fire support representatives.

As for the FIST, the main issue in the task force war-gaming sequence is to assemble all the team players, either face to face or through normal communications, and exercise combat tasks. This relationship allows the FSO to coordinate with the ALO in the same way he would in combat. He learns firsthand how to integrate CAS into the scheme of maneuver.

***To lead an untrained people to war
is to throw them away.***

— Confucius, 500 B.C.

To further enhance realistic training, the commander can require the company teams to war-game concurrently with a DUNN-KEMPF exercise and feed data into the task force scenario.

CAMMS can be used to train both the battalion and brigade staffs. The brigade FSO, however, has a larger arena to consider. In the defense, for example, the brigade FSO's training would include coordination with:

- ☐ his task force FSOs,
- ☐ the brigade S2/S3 and S3 air,
- ☐ the S3 in the division artillery TOC,

- ☐ the DS battalion commander,
- ☐ the S3 in the DS bn FDC, and
- ☐ the ALO.

The significance of the relationship between the brigade commander and his FSO cannot be overstressed. Brigade is where the battle will be fought. Accordingly, the war-gaming part of developing the commander's estimate—enhanced by LONGTHRUST and CAMMS—can insert the real time, real units, and real enemy factors into selecting the appropriate course of action. For example, the tactical scenario discussed in chapter 3 could provide the basis for a war game scenario in which the commander and FSCOORD could see the results of their various courses of action. Once a course of action is selected, it would be played again to determine contingencies and to prepare for them.

The PEGASUS war game is another excellent way for the brigade commander to train his command group and the FSO. For example, the capability to provide the command control required to execute a counterattack could be exercised. Step by step, the fire support requirements could be integrated with the tactical flow of the battle.

CPXs or TEWTs are where the FSO can really test his skills and SOPs. The minute-by-minute interface in a tactical setting with the actual officers (not stand-ins) who perform the duties in an intangible training achievement not accomplished by war games. CPXs should be the primary vehicle through which an FSO practices the skills he has learned.

FTXs are a desirable way to train FSOs with maneuver. However, the dollar constraints limit the amount of available resources. Therefore, the FTX will be used only occasionally to culminate or tie together certain concepts or operations already refined in war games or CPXs.

☐ **The Div Arty Commander/FSCOORD and the Division Commander**

The div arty commander is the hub for fire support in the division. His mission is to insure that the division has the fire support required to fight the battle. His principal agencies that discharge this mission are:

- ☐ division FSEs (tac and main),
- ☐ div arty TOC,
- ☐ FA brigade commanders,
- ☐ FA battalion commanders,
- ☐ FSOs, and the
- ☐ target acquisition battery (TAB) commander.

The critical tasks to train himself and these agencies are in ARTEP 6-302, *Division Artillery Headquarters and Headquarters Battery*, and ARTEP 6-307, *FA Target Acquisition Battery*. The spectrum of requirements ranges from providing fire support and counterfire to suppressing enemy air defense weapons. The capability of the div arty commander to manage this process effectively requires constant training of his organic assets with the various division staff sections and the corps FSE. The div arty relies on significant input and interaction between organic agencies and the maneuver staff to perform the training and combat mission.

For example, based on the example in chapter 6, the div arty commander could organize a CPX to practice nuclear subpackage planning, a critical ARTEP task. Participants could include representatives from G2/G3 operations, all sources of intelligence center, NBCE, and the TACP. The FSE could be the executive agent for the exercise, drawing the subpackage planning together from the participating division players and from information provided by the div arty TOC, brigade FSOs, and DS battalion commanders. This same procedure could be used for chemical and conventional critical tasks fire planning.

The div arty commander can provide significant input to the brigade war gaming exercises. The information flow between the FSO and the div arty TOC would add realism and exercise the two primary agencies responsible for supporting the brigade commander. Division could provide G2/G3 representation along with all sources of intelligence and Air Force participation. This would allow the brigade staff to war-game, working with the principal participants that would function together in an FTX or combat. This is a workable procedure for training or developing and testing operational plans.

When the division commander exercises the FIRST BATTLE war game, the div arty commander is a key player. For example, continuing with the nuclear scenario, the commander can cause his staff to develop scenarios in which critical defense situations can occur. The coordination required to make decisions on the proper course of war gaming greatly contributes to the development of actual contingency plans. Involving himself in this type of training provides the div arty commander with some significant insights. This is particularly true if applied to each of the critical ARTEP tasks and if all the personnel and agencies that contribute to the task are exercised together. As the div arty training manager, he can:

- ☐ evaluate the training status of his command;
- ☐ determine specific training objectives for the various units and elements in his command;
- ☐ provide the time, people, area, and equipment to facilitate training; and
- ☐ stay abreast of his command's training status to identify weaknesses as they occur.

A significant factor the div arty commander has at his disposal is surprise—the proper reaction to surprise is one of the combat realities that training must strive to achieve. For example, the div arty commander could direct the DS commanders

to have their FISTs report to selected positions with all equipment and ready to observe by a certain time. Some of this could be done at the M31 range. The FSOs would be given similar orders. If company team and task force representation could be provided, this would enhance the value of the training. In fact, a maneuver scenario should drive the training. FDC and div arty TOC communications would be established. With about 40 of his people, the div arty commander can informally evaluate the performance of his:

- ☐ 3 brigade FSOs,
- ☐ 9 battalion FSOs, and
- ☐ 27 FISTs.

This can be done in local training areas without live fire using ARTEP and soldier's manual critical tasks and standards. This is performance-oriented training exercising command and leadership at all levels.

There are any number of combinations the div arty commander may use to train the FSCOORD team. They range from full-scale FTXs to a few key members playing a war game. Whatever the technique, it must include close cooperation with maneuver and the result must be the same—combat readiness. Any commander must look for and make training time available. A lot can be done in a little time. For example, in an hour the FIST members can fire several missions using the M31 trainer. The FIST chief can perform terrain analysis with his company commander and, based on an assumed threat, prepare a hasty fire plan. A battalion FSO can provide a tactical situation to his FIST chiefs and require them to prepare a plan to support it. The brigade FSO can do the same thing with his battalion FSOs.

Perhaps the greatest challenge for the training manager and the trainer is to develop training that closely approximates how a unit or individual will operate in combat. For example, in rifle marksmanship training, the tendency is to require soldiers to fire at popup targets that will appear for 10 to

12 seconds perpendicular to the line of fire. The facts of combat are that over 90 percent of all targets detected by infantrymen on the battlefield move at an angle to the firer. This is a much more difficult target to hit. Also, the average combat target exposure time tends to be about 6 seconds rather than 10 or 12 seconds. The soldier that is trained to fire his rifle at targets that are perpendicular to him, exposed for 10 to 12 seconds, is not prepared for what he will encounter in combat.

☐ **Fire Support/Maneuver Training Summary**

Recognizing that maximum value must be obtained from limited resources, emphasis in training should be placed on training skills with inexpensive devices and exercising skills in realistic environments. The devices and techniques discussed here can be used to provide increasingly more sophisticated training at all levels. The start point is individual training based upon soldier's manuals followed by collective training of sections and units using ARTEP tasks. While this is being accomplished, staffs, staff sections, and commanders can refine skills using war games and CPXs.

CPXs can be expanded upon in nonshooting FTXs or TEWTs. This entire program can then be integrated at the appropriate time with live fire, scenario-oriented field exercises where all of the skills are brought together in a manner that provides maximum realism. A program such as this takes advantage of relatively inexpensive training techniques and develops skills while the bulk of training ammunition and funds are reserved for use in live fire exercises used to reinforce training.

7-7. Summary

How the training manager develops realistic, flexible, responsive, and continuous training—dynamic training that makes

individuals and units proficient and keeps them there—has been discussed. Specific individual and unit combat tasks and standards have been developed to provide an objective basis for analyzing and evaluating training. These represent clearly defined training objectives that minimize the subjectivity in training evaluations. But training still contains an element of subjectivity in the sense that total training readiness defies strict quantification. Readiness is not a pure statistical exercise because only the commander really knows when his unit is trained and ready to fight. It is easy to quantify AWOLs, reenlistments, and maintenance. This is the "statistic snake pit" many commanders have fallen into because they do not understand the proper proportion of objective and subjective elements in training and readiness evaluation.

A great deal of training effectiveness depends upon the proper environment and atmosphere. The entire command must have a spirit of close teamwork—if the commander does not demand well-trained units based upon training as the top priority, subordinates have little chance to develop their organizations along well-trained lines. Time, imagination, and energy must be devoted to the critical training aspects that save lives and win wars.

Many soldiers are disappointed by our failure to place real demands on them. They want the Army tougher and challenging. This means keeping standards high—paying the price for improved professionalism. A small Army demands it. The professional development of junior officers and NCOs at the unit level is central to all training plans. Allow junior leaders to make mistakes. Demand that they:

- ☐ pursue excellence,
- ☐ experiment,
- ☐ exercise initiative,
- ☐ be innovative, and
- ☐ try new approaches.

The test of battle is *execution*—and that is our training mission.

The best form of "welfare" for the troops is first-class training.

— Erwin Rommel:
Rommel Papers, ix, 1953

Forthcoming equipment is discussed in chapter 8. Read this chapter:

- ☐ To gain an appreciation of how the combat power of the fire support system—but more important, the combined arms team—will be improved.
- ☐ To recognize the training implications that will emerge—new simulators, devices, and training media are being developed to accompany the equipment accessions.





Future Developments

A superiority of fire, and therefore a superiority in directing and delivering fire and in making use of fire, will become the main factors upon which the efficiency of a force will depend.

— Ferdinand Foch, 1919

- WHY**
- Maneuver and FA commanders require an appreciation for how new materiel developments will improve the responsiveness, accuracy, lethality, and mass capability of the fire support system.

- WHAT**
- This chapter discusses:
 - firepower in modern combat;
 - the automated fire support planning and coordinating capability;
 - new target acquisition hardware;
 - increased observer effectiveness;
 - faster, more deadly fires; and
 - training devices.

8-1. Firepower

The armored and motorized forces of our potential adversaries far outnumber our own forces. Their equipment was proved in the 1973 Arab-Israeli war to be far more lethal and sophisticated than any we have faced in past wars. In the event of war, we must be able to hold firm against the masses of men and equipment we will face—not with more men and small weapons, but with *firepower*.

Firepower—and ultimately combat power—is in large part a function of the capabilities of our weapon systems. Hardware items projected to enter the inventory in the next few years will significantly increase our combat power.

8-2. Improved Fire Support Planning and Coordination Capability

To plan and coordinate fires, it is essential that all available information be processed with speed, accuracy, and completeness. TACFIRE is a computerized fire support command control system being introduced in the early 1980s to assist commanders in bringing the full potential of fire support to bear. From company to division, TACFIRE represents a dramatic advance in the FSCoord's capability to plan and coordinate fires. TACFIRE will:

- Enhance control by fast and secure communications. Messages are digitized,

encrypted if required, transmitted over normal FM nets, and decrypted and displayed at the desired destination. Digital traffic also reduces vulnerability to ECM.

- ☐ Store and update target data so that the most current data are available for printout, application, or transmission to another fire support or maneuver element.
- ☐ In accordance with the commander's priorities, automatically provide recommendations for attack, volume of fire, and munitions. All FA, naval, CAS, and missile weapon systems are considered.
- ☐ Provide nonnuclear, nuclear, and chemical target analysis and fire plans.
- ☐ Enhance fire support coordination by automatically considering fire support coordinating measures.

For more information about TACFIRE, see FM 6-1, *TACFIRE Operations*.

8-3. Improvements in Target Acquisition

The imperative to see the battlefield is set forth clearly in earlier chapters of this manual and in FM 100-5 and FM 71-2. It is fundamental to both offense and defense. The full value of long-range fire support means is degraded if we cannot find and locate targets for them. This pressing need for seeing the battlefield has made target acquisition devices high-priority developmental items.

☐ Mortar and Artillery-Locating Radars

The mortar-locating radar, AN/TPQ-36, and the artillery-locating radar, AN/TPQ-37, emphasize single-round target locations and simultaneous processing of multiple targets. The Q-36 ranges out to 15 km and the Q-37 out to 35 km. Both transmit target locations to TACFIRE so that counterfires can be on the way in less than a

minute. The radars will be issued to div arty TABs and DS battalions of separate brigades by 1980.

☐ Moving-Target Radar

A moving-target-locating radar that can locate targets at ranges of 30 km is being developed for div arty. It features better electronic counter-countermeasures (ECCM) capabilities and mounts in an M113 armored personnel carrier. It will be capable of adjusting and registering 155-mm and larger artillery. It is planned for fielding between 1985 and 1990.

☐ Remotely Piloted Vehicle (RPV)

The remotely piloted vehicle system is designed to provide real-time target acquisition and combat information beyond the line of sight of supported ground forces. The system can detect, recognize, and identify targets and assist artillery engagement out to 20 km forward of the line of contact (LC). Combat effectiveness will be increased, especially against cold, nonmoving, nonemitting targets, while the exposure of manned aircraft to the enemy will be reduced. The system can perform airborne target acquisition, adjustment of FA fires, laser designation for all triservices precision guided munitions, reconnaissance, and damage assessments.

☐ Sound Ranging Equipment

Sound ranging capabilities will be enhanced significantly by the introduction of the AN/TNS-10 sound set. This new sound ranging set is a transistorized product improvement of the AN/GR-8. In addition, the AN/GRA-114 radio data link will eliminate the requirement for laying and maintaining wire lines from microphones to the sound central. Fielding of the AN/TNS-10 and the AN/GRA-114 will increase the reliability of the sound ranging system while decreasing greatly the time required for installation.

☐ **Photolocator**

The photolocator is a computerized optical-mechanical system designed to establish grid coordinates and altitude of selected points using aerial photographs. It can be used to locate targets and extend survey control deep in enemy rear areas. The photolocator is accurate to within 10-20 meters and will be available at division and corps artillery by 1980. A proposed improvement features more rapid target location using TV (television) images.

☐ **US Air Force Target Acquisition Developments**

Devices scheduled for fielding by 1985 will provide a tremendous increase in the target acquiring capability of the fire support system.

☐ The precision locator strike system (PLSS) places an electronic grid over the battlefield that helps locate targets and provides control for strike aircraft or bombs.

☐ Multilateration radar (MLR) will provide a significant increase in the Air Force's ability to detect ground targets.

☐ RF-4C quick strike reconnaissance (QSR) aircraft will transmit ground sensor detections to a tactical air control center, combat information center, or accompanying strike flight.

8-4. Observer Effectiveness: Radical Improvements

Testing has established that a major portion of the fire support delivery error is attributable to observers. The mobility factor in modern combat further complicates the problem—both observer and target will be moving frequently, making target acquisition, location, and attack difficult. Materiel that will be available in the near future will drastically reduce observer error and greatly improve responsiveness.

☐ **Digital Message Device (DMD)**

The DMD sends and receives messages digitally using existing FM radios. It is a handheld battery-powered unit that can send calls for fire, fire planning targets, unit locations, or plain text messages. It will significantly increase responsiveness by reducing radio transmission time. It is being fielded as part of TACFIRE.

☐ **Laser Rangefinders and Designators**

☐ The battery-powered AN/GVS-5 laser rangefinder is held and sighted like a large pair of binoculars. The operator looks through a single 7×50-mm eyepiece to locate and range targets. Distance is displayed in meters. By ranging the initial adjusting round, an observer provides instant feedback to FDCs through the DMD, "closing the loop" and facilitating rapid massed fire for effect. It will be fielded in 1980. Instructions for its use are in FM 6-30, *The Field Artillery Observer*.

☐ The vehicular or ground laser locator designator (V/GLLD) and its ancillary equipment are configured to provide distance, direction, and vertical angle as well as laser illumination—termed "designation"—for Army, Navy, and Air Force laser-guided munitions. While the GLLD can be transported by members of the FIST, it normally will be mounted in a vehicle. It is battery powered and operates with an AN/TAS-4 night sight, and the operator uses the DMD to transmit data to TACFIRE.

☐ **FIST Vehicle (FISTV) Kit**

The FISTV kit combines a laser designator/rangefinder, the DMD, and night vision devices. The kit will be adapted to the M901 improved TOW vehicle (ITV) and issued to mechanized, infantry, armored, and cavalry FISTs. The FISTV, available in the mid-1980s, will drastically enhance the FIST headquarters role as a shooter and fire

support coordinator, improve accuracy and speed of operations, and thereby provide improved fire support for the supported company/troop/team commander.

8-5. More Effective Fires: Range and Lethality

As the following developmental items become available, FSCOORDs will be able to provide better fire support in two ways. Greater range capability will allow much more flexibility in massing fires, and improved projectiles will make those fires more deadly.

☐ Weapons Developments

☐ A new 81-mm mortar is being developed for armored and mechanized battalions, and a new 60-mm mortar for infantry, airborne, and air assault companies. In addition to increased ranges, these mortars feature smoke and illumination as well as HE capabilities. They will be fielded between 1979 and 1981.

☐ The M198 155-mm towed howitzer has been developed to achieve an 18 km range with the current HE projectile and a 30 km range with a rocket-assisted projectile (RAP). It is being considered as the direct support weapon for the light infantry division.

☐ The M110A2 8-inch self-propelled howitzer, complete with the long tube M201 cannon, new muzzle brake, and eight product improvements, will enhance system reliability/maintainability and will extend the present range to approximately 30 km with the new rocket-assisted projectile.

☐ The Lance missile gives the corps commander an 8- to 110-km nuclear punch, and the addition of a nonnuclear warhead to the system provides a nonnuclear capability from 8 to 65 km.

☐ The general support rocket system (GSRS) will provide corps and division commanders with a tremendous amount of firepower quickly, at ranges in excess of 30 km. It is expected to be fielded in the early 1980s.

☐ HELLFIRE is an aircraft-launched, laser-guided rocket system capable of multiple launches and guidance of rockets onto different targets using separate laser-designator codes.

☐ The Pershing II missile, with a terminally guided reentry vehicle, is a significant improvement to the Pershing 1A in accuracy and range. It provides high probability of damage, especially against hard targets, and uses warheads with much smaller yields—some similar to those of the current cannon inventory. Also, it has an earth penetrator, which provides unique capabilities against hard point targets.

☐ The US Air Force Maverick missile inventory will be augmented with improved electro-optical, laser, and imaging infrared guidance systems to provide round-the-clock Maverick capability.

The M109A2/A3 howitzer is the product-improved M109A1 including 18 improvements and the new ammunition bustle. The M109A2 is the new production item, and the M109A3 is the depot retrofit item. Compatibility testing with the M203 propelling charge is underway in an attempt to achieve the 30-km range capability with the M109A2/A3.

☐ Ammunition Developments

☐ The cannon-launched guided projectile (Copperhead) is being developed to give the FA a capability to kill moving armored targets. Copperhead is guided by laser energy from a laser-designator (like the GLLD) and represents a quantum jump in field artillery effectiveness.

□ A Letter of Agreement is being staffed on a field artillery ammunition support vehicle (FAASV) to replace the M548 cargo carrier. It will incorporate materiel-handling equipment and a ballistically protected cargo area.

□ The new 155-mm/8-inch DPICM projectiles M483A1/M509E1, using the M203/XM188E1 propelling charges, are being developed to provide an antipersonnel/antiarmor submunition delivery capability to a range of approximately 22/24 km. In the interim, prior to the fielding of the new HE projectiles, the M483A1/M509E1 projectiles will serve as the registration vehicle for the cargo-optimized family of projectiles. The 155-mm M483A1 is currently being fielded, and the M509E1 should be fielded in 1980.

□ The new 155-mm/8-inch rocket-assisted projectiles M549A1/M650, using the M203/XM188E1 propelling charges, will provide a 30-km range capability. Fielding should begin in FY 79 for the M549A1 and in FY 80 for the M650.

□ Field artillery delivered antipersonnel/antitank scatterable mines projectile (M692/M718) will soon be in the inventory, providing the field artillery with the capability to emplace minefield obstacles.

□ The new 155-mm/8-inch HE projectiles XM795/XM711 are being developed to provide larger warhead volume, high fragmentation steel bodies, and a 22/24 km range capability. The XM795 should be fielded in 1982. The XM711 program is presently unfunded.

□ The new 155-mm smoke projectile XM825 is being developed with a WP filler that will not pillar. The coverage obscuration time will be at least 5 minutes. Time from canister ejection to effective obscuration will be less than 45 seconds. Fielding is scheduled for 1983.

□ New binary chemical projectiles and improved nuclear projectiles are being developed in both 155-mm and 8-inch systems.

□ An 8-inch antiarmor projectile called SADARM (sense and destroy armor) is in the early stages of development. It will expel three sensor-activated, parachute-deployed submunitions. SADARM is truly a fire-and-forget projectile.

□ A new three-charge propelling charge family is being developed for 155-mm weapons and should be fully fielded by 1983. The XM211 charge should be fielded in 1983 and will consist of zones 3-6. The product-improved M119A1 charge, consisting of zone 7, will be fielded in 1980-81. The presently fielded M203 charge is zone 8.

□ The US Air Force is developing a new generation of cluster munitions—many with laser guidance packages—for large area targets. Many cluster bomb dispensers will contain target-activated munitions (TAM) designed to impede vehicle movement. These munitions are scheduled for fielding by 1981.

8-6. More Effective Fires: Responsiveness and Accuracy

Numerous items are being developed with a view toward increasing the accuracy and the speed with which field artillery fires are delivered.

□ The Battery Computer System (BCS)

The BCS is a technical fire direction computer designed to interface with TACFIRE. It features a widely expanded, more rapid computational capability and gun display units (GDU) that display firing data to howitzer section crews almost instantaneously. The BCS will be fielded by 1981.

☐ **Card Programable Handheld Calculator (CPHHC)**

The CPHHC will be used in the following applications when the primary computational method is not available: cannon and Lance fire direction; sound/flash platoon operations; and survey computations. A commercially available device will be fielded in late 1980.

☐ **The Field Artillery Meteorological Acquisition System (FAMAS)**

FAMAS will be a fully automated, highly mobile, lightweight FA meteorological system capable of providing hourly met messages. A digital interface with TACFIRE will be included.

☐ **Position and Azimuth Determining System**

The position and azimuth determining system (PADS) is a vehicular-mounted or aircraft-mounted, inertial navigation system capable of extending grid coordinates, altitude, and directional control very rapidly to accuracies well suited for FA batteries.

☐ **The Field Artillery Projectile Velocimeter**

The velocimeter is a battery-powered doppler radar being developed to measure individual piece muzzle velocities. It is designed to be rapidly attached to or removed from any howitzer in a given battery. By 1979 one will be issued to each FA battery.

☐ **Accurate First-Round Fires**

Given accurate computational procedures (from the BCS or TACFIRE), accurate firing battery location (from PADS), accurate target location (from the GVS-5 or GLLD), timely and accurate meteorological information (from FAMAS), and an accurate muzzle velocity (from the velocimeter), field artillery batteries will be able to achieve first-round fire for effect *without registering*.

8-7. Training Devices

The following devices are being developed to improve the soldier and unit training level in the garrison, local, and major training areas. Their purpose is to maximize training and get the most value from every full service round fired.

☐ **The Observed Fire Trainer (OFT)**

The OFT is a computerized device that projects high-resolution color terrain scenes onto a large screen. Associated 1:50,000 maps are used to teach terrain association and map reading. Simulated firings of representative field artillery and mortar weapons will provide a wide range of shell/fuze combination bursts for teaching observed fire procedures. Observers will engage realistic enemy targets in fixed, fleeting, and moving arrays. The OFT will be fielded by 1981.

☐ **Low-Cost Indirect-Fire Training Rounds (LITR)**

Low-cost, full-caliber training rounds are being developed for the 81-mm mortar and the 105-mm, 155-mm, and 8-inch howitzers. These rounds will be ballistically matched to their respective HE service rounds and provide an observable smoke signature so it can be seen on impact and adjusted by an observer. It is scheduled for fielding in 1981.

☐ **Ground/Vehicular Laser Locator Designator (G/VLLD) Trainer**

The G/VLLD trainer will enable an individual to become proficient in performing those operations required with the G/VLLD to range, track, and designate targets (stationary and moving) for attack by the 155-mm CLGP (Copperhead) and other guided munitions. Fielding is planned for the early 1980s.

☐ **Tape Cartridges for TACFIRE Training**

The cartridges will be compatible with TACFIRE tactical equipment and enable trainers to individually self-pace students through various applications of TACFIRE. Operators can train themselves. These tapes should be fielded in 1979.

☐ **Combined Arms Tactical Training Simulator (CATTS)**

This trainer is for task force commanders and staffs. It is computer assisted and allows free play tactical exercises. CATTS assesses battle losses, accounts for ammunition fired, and works in real time. Communications are the same as those in a battalion task force headquarters. CATTS is a large device requiring an extensive housing facility. One model is being tested at Fort Leavenworth,

and USACGSC students are using it to gain both maneuver and fire support training experience.

8-8. Summary

FSCOODs have at their fingertips a system that electronically automates fire support over the battlefield. This coupled with new target acquisition capabilities and armor-killing munitions gives force commanders significant hip-pocket combat power immediately available.

Automation and electronic devices are not the total answer to warfare—it takes adept, imaginative, and flexible commanders to make machines produce combat power. This comes from a thorough knowledge of equipment capabilities and tough, realistic training that keeps our fighting edge sharp.

"Whoever wants to keep alive must aim at victory. It is the winners who do the killing and the losers who get killed.

— Xenophon, 401 B.C.

Appendixes

The chapters of FM 6-20 are written for maneuver commanders and their staffs and commanders of fire support means and their staffs. The appendixes are primarily for FA personnel. They are written in sufficient detail to be used for instructional purposes.

Accordingly, the appendixes contain purposeful repetition of material from the chapters to insure complete discussion and to insure that subjects flow smoothly without the user having to continuously refer back to chapters for pertinent information.

Since the appendixes are "self-contained units," the FA user may desire to place them in a separate binder and tab them to facilitate their use.

Appendixes A through F provide detailed information on individual portions of the total fire support system. Appendixes G and H are concerned with terms, documents, and agencies with which the FSCoord will accomplish his mission.

Appendix I explains "how to" accomplish the planning and coordination of the fire support system. Appendix L is a glossary of terms, definitions, and abbreviations and appendix N is a complete list of references.



Note to the User

- A Target Acquisition**
- B The Field Artillery System**
- C Mortars**
- D Close Air Support**
- E Naval Gunfire Support**
- F Other Fire Support Means**
- G Fire Support/Fire Direction Facilities, Resources, and Duties**
- H Fire Support Terms and Techniques, Aids and Documents**
- I Fire Support Planning and Coordination**
- J Fire Support for Special Operations**
- K Nonnuclear Target Analysis**
- L Glossary of Terms, Definitions, and Abbreviations**
- M Extract of STANAGs 2099 and 2104**
- N References**

Appendix A

Target Acquisition

PARAGRAPH

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A-3	Discussion of Target Data	A-3
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Appendix A

Target Acquisition

WHY

- The FSCOORD must know how target acquisition operates within the intelligence system to produce targets for the fire support system and a picture of the battlefield that can be used in the maneuver commander's decisionmaking process.

WHAT

- This appendix tells you:
 - what target acquisition devices can do;
 - what target intelligence agencies are available;
 - how the target acquisition and intelligence agencies operate together;
 - who operates in the system;
 - how the target acquisition system helps to get timely and accurate fire on the target.

A-1. General

a. Improved weapons technology has added depth to the battlefield by increasing ranges and has made combat more lethal by improvements in ammunition. These advantages will allow us to attack opposing forces effectively only if they are coupled with an accurate and responsive target acquisition system. The target acquisition system must be able to acquire hostile targets at ranges that are at least equal to the capability of the longest range fire support means.

b. Therefore, targeting agencies must have access to all intelligence/information available to the tactical commander, allowing them to detect and locate the opponent for attack as early as possible. Effective target acquisition requires the rapid and complete integration of this intelligence from all sources. We cannot rely on single devices or observers providing targets independent of each other; we must merge inputs from a multitude of sources ranging from the frontline soldier in his foxhole, to the airborne sensor scanning deep into opponent territory. With the tremendous increase in mobility, the dimension of time has become increasingly important. One of the greatest difficulties confronting the commander and his fire support coordinator is balancing the need for timely target attack against the extra time required to insure location accuracy. Whether to attack an imprecisely located target now or to take the time to include the input from additional sources necessary to further develop the target is a complex problem. This appendix discusses the intelligence and target acquisition agencies that are available to help the commander resolve this dilemma.

A-2. Definitions of Target Data

a. Combat information is raw data that can be used for fire or maneuver as it is

received with no interpretation or integration with other data.

b. Intelligence is data that has undergone validation, integration, comparison, or any other form of analysis.

c. Target acquisition is the timely detection, identification, and location of ground targets in sufficient detail to permit effective attack by supporting weapons.

A-3. Discussion of Target Data

a. Combat information is a readily exploitable, near real-time source of target data. Intelligence, on the other hand, requires time for fusion and analysis and is more appropriate for use by higher commanders. Target acquisition transcends the gap between these two ends of the battlefield information spectrum. Although target acquisition devices appear to produce primarily combat information, they can also provide intelligence data, just as targets can be generated from all sources of intelligence/information. Indeed, the key to battlefield success in the future may well be the sharing of information among all of the intelligence agencies located on the battlefield.

b. Target information will come directly from a source (e.g., soldier; radar) or indirectly through a collection agency (inf bn, S2; target acquisition battery (TAB) processing section). Direct reporting of target information is limited to those sources that can locate the target to an accuracy specified by the commander or to those agencies that can locate, to a lesser accuracy, high priority, time-sensitive targets. There are systems designed specifically for target acquisition although they may perform the secondary function of intelligence gathering. For example, a moving target locating radar can provide accurately located targets for immediate attack as well as supplement the general surveillance and early warning system of the force.

c. There are numerous systems that can provide target information in addition to their primary intelligence function. This is demonstrated by electronic listening and locating stations which, though primarily oriented on obtaining electronic order of battle, can locate opposing elements through radio and radar direction finding. FA fire support and targeting elements may deal directly with collection agencies in the target acquisition effort. The information obtained from the exploitation of many sources of intelligence at all echelons is forwarded to collection agencies where it is analyzed and collated with other information to produce tactical intelligence for the commander and targets for attack with his fire support weapons. Although this processing takes time, responsive production of targets and target information can be realized if target information is passed to fire support assets as soon as it is identified.

A-4. The Target Acquisition Battery

a. The main component of the FA target acquisition is the TAB at div arty. This unit produces counterfire targets almost exclusively and employs the following equipment:

□ Five AN/MPQ-4A weapon-locating radars.

Div arty TOC allocates these radars to DS and other FA battalions where needed in the division zone.

These radars can locate mortars (0 to 50 m accuracy) and artillery (0 to 200 m accuracy) to a range of 15 km.

Their capability is decreased by multiple firings of enemy weapons. Further, they are vulnerable to radar direction finding (DF) and jamming; therefore, they should not search indiscriminately or continuously but should be cued by other sources. Noncontinuous operation will enhance survivability by countering enemy DF efforts.

- One AN/TPS-25 or AN/TPS-58 moving target radar.

These radars are positioned by div arty. They provide line-of-sight search for troop and vehicle movement to 18 km (AN/TPS-25) and 20 km (AN/TPS-58).

These radars have the same vulnerabilities as the AN/MPQ-4A and should be operated in the same way to counter enemy DF efforts. In addition, their capabilities are decreased because of high winds, and their efficiency is decreased because of operator fatigue, which is common.

- Two sound-ranging bases.

These bases locate mortars and air defense and FA weapons (0 to 150 m accuracy) to a range of 20 km.

Their capabilities are limited because of high winds, multiple weapons firing, unfavorable terrain, and accurate survey positioning requirements. They rely on wire communication (until the AN/GRA-114 data link is fielded), and their operators may be confused by artillery simulators.

- Eight flash-ranging observation posts.

These OPs locate air defense and FA weapons, overwatch OPs, and other targets (0 to 50 m accuracy) to a range of 10 km (subject to visibility conditions).

The OPs require accurate survey for best location accuracy and should be intervisible. Operators may be confused by simulators and dummy positions.

Note. Personnel and equipment for airborne/airmobile division TAB will differ slightly.

b. The survey requirements for the above equipment vary. The radars can operate off map inspected locations but their accuracy is increased when survey control is available.

Flash bases can also operate, in an emergency, with assumed location data but direction control is critical for accurate locations. Sound bases are heavily dependent upon survey in order to produce targets of usable accuracy; however, counterfire targets can be attacked using the sound-on-sound adjustment technique without survey. In addition to its locating platoons, the TAB has a processing section that operates in the target production element of the div arty TOC. Here, the target processing section produces targets from reports submitted by the battery target acquisition devices as well as from all other agencies available to the force.

A-5. Other FA Agencies

Ground and aerial observers provide another asset for targeting data for fire support means. Ground observers with maneuver elements locate targets for immediate attack or for incorporation into fire plans. Although the FIST will report most of these targets, many other ground personnel will provide target information. The aerial observers assigned to div arty are valuable, immediately responsive sources of targets and intelligence. From aircraft in nap-of-the-earth flight they can acquire targets, call for fire, or report information over a wide frontage.

A-6. Non-FA Agencies

Other aviation assets may also report target information. Army aviators/observers in fixed and rotary-wing aircraft and Air Force forward air controllers (FAC) and other pilots should be exploited to provide target information. The employment of the various surveillance and intelligence agencies for target acquisition is limited only by their physical characteristics and their availability. Numerous agencies can detect and locate elements of the enemy force with

sufficient accuracy and timeliness to bring them under attack with fire support weapons. It must be recognized, however, that unless prior coordination has been made, requirements identified, and tasking accomplished and approved by the force commander, these assets may not be sufficiently responsive for target acquisition use. Table A-1 and figures A-1 through A-3 show intelligence asset availability and collection agencies that provide targeting information for corps, divisions, and maneuver units.

A-7. Collection Agencies

a. Corps

The corps G2 has access to strategic and national intelligence agencies, a combat EWI group composed of an electronic warfare battalion, a combat intelligence battalion, a military intelligence company (aerial surveillance), and the USAF direct air support center (DASC). These agencies together provide most of the intelligence at corps level. Targeting information received by corps is obtained from the G2 element by the artillery intelligence officer and given directly to the corps FSE. Information relayed to division level targeting operations is sent by the corps FSE to the division FSE for action or further dissemination to the division artillery TOC. Tactical intelligence is passed via intelligence channels to the division G2.

Table A-1. Intelligence Asset Availability.

	CORPS	DIVISION	BRIGADE	BATTALION	COMPANY
NATIONAL STRATEGIC SYSTEM	■				
USAF/USN SYSTEMS	■	■			
SIGINT					
COMINT	■	■	■		
ELINT	■	■	■		
REMS		■	■	■	■
GSR		■	■	■	■
WEAPONS LOCATING RADAR		■	■		
IMAGERY					
PHOTO	■				
IR	■	■			
SLAR	■	■			
RECONNAISSANCE UNITS	■	■		■	
TROOPS				■	■
IPW	■	■	■		

Note. These assets are normally assigned, attached, or in direct support at the echelons as shown

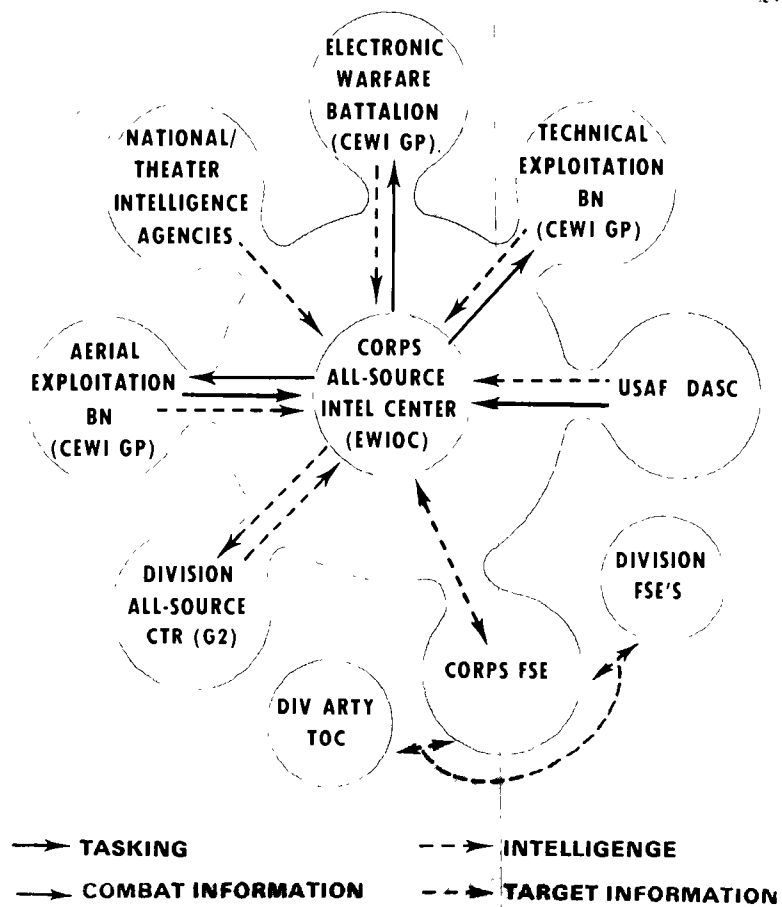


Figure A-1 Corps collection agency assets.

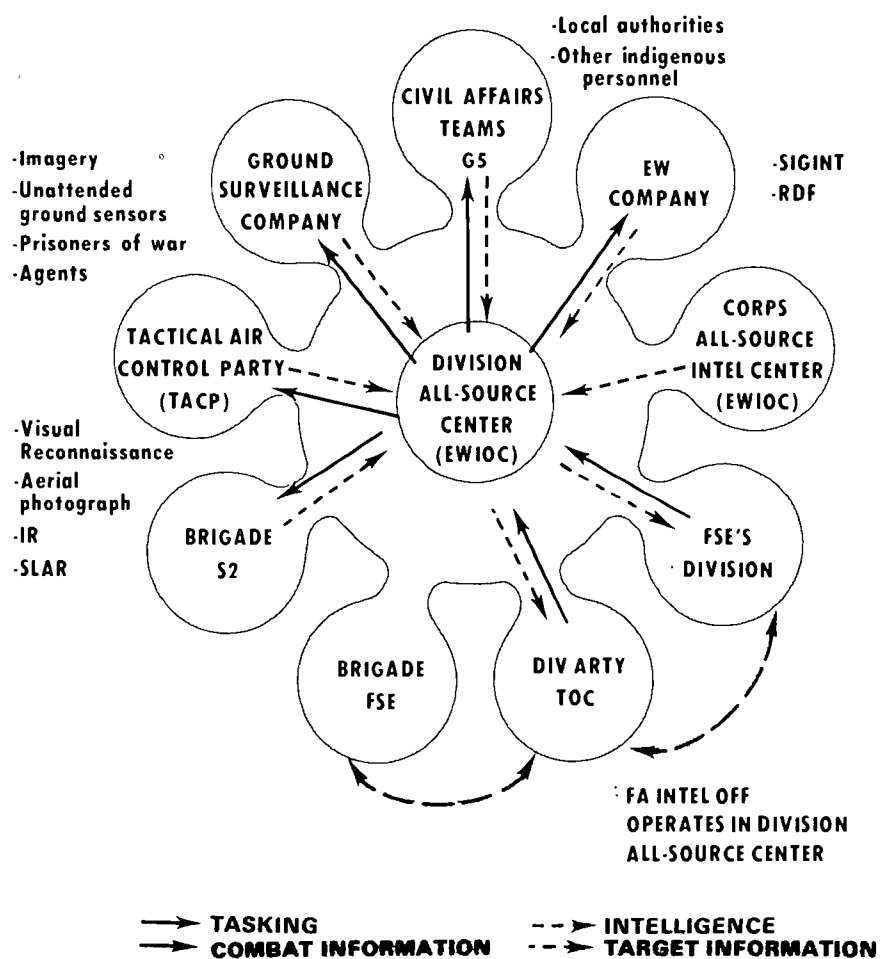


Figure A-2. Division collection agency assets.

**G2 ► CORPS
DIVISION**

**S2 ► BRIGADE
BATTALION/TF**

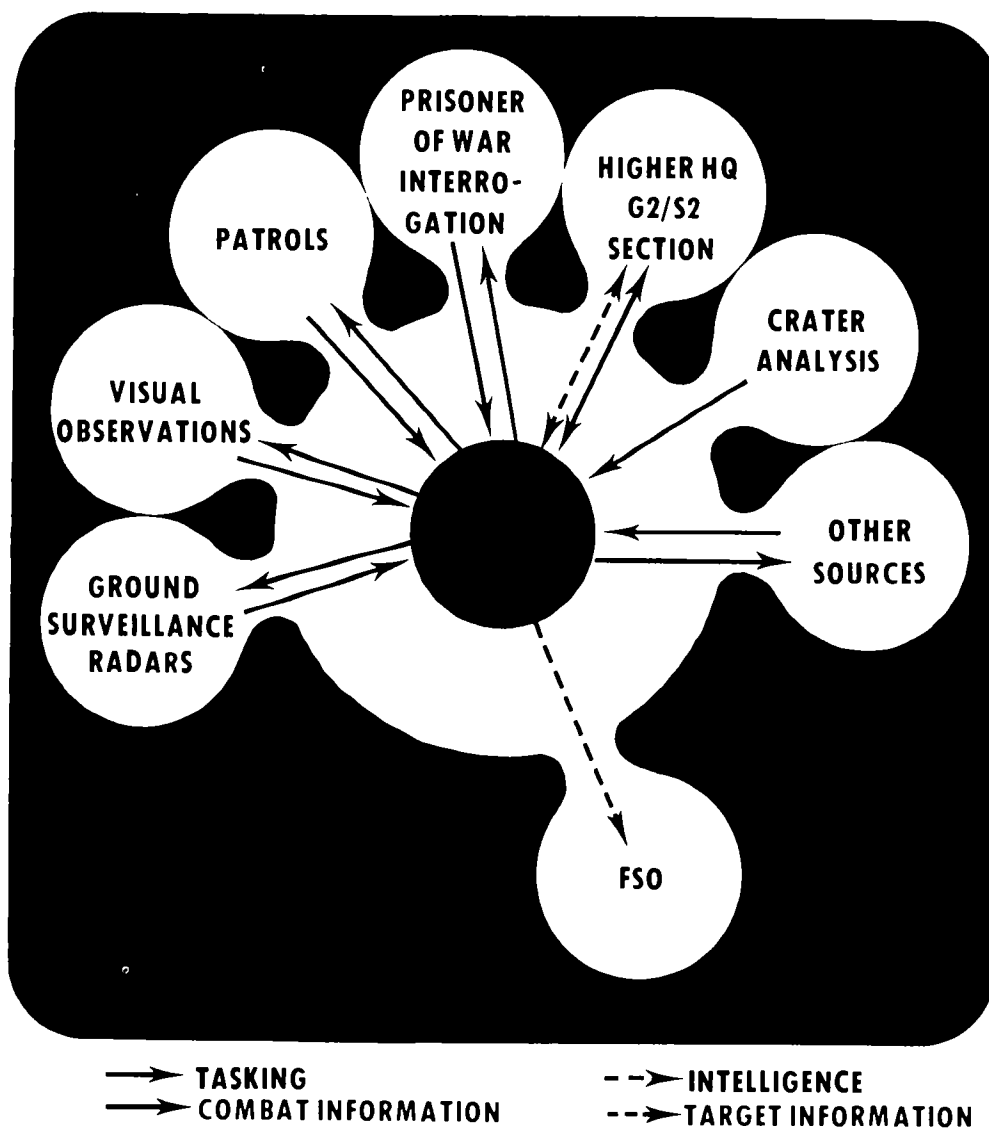


Figure A-3. Maneuver unit collection agency assets.

b. Division

The G2 is the manager of intelligence assets at division level. To support his collection activities he has staff supervision of a combat electronic warfare intelligence (CEWI) battalion. The CEWI battalion gathers intelligence from remote acoustic, seismic, and magnetic sensors; prisoners; agents; and aerial imagery reports. The electronic warfare (EW) company provides signal intelligence (SIGINT), including radio/radar direction finding, to G2 through the electronic warfare intelligence operations center (EWIOC). When target information of particular importance or perishability is developed from any intelligence asset, as determined by criteria established by the division commander, it is sent by the most expeditious means directly to the div arty TOC or a predesignated firing unit as shown in figure A-4. These "event-triggered reporting" links may be established with other users (e.g., a maneuver brigade).

Civil affairs teams under the control of the division G5 have frequent contact with local authorities and other indigenous persons who may provide targeting information through the G5 to the G2. The reconnaissance air liaison officer uses both Army and Air Force aircraft to perform visual reconnaissance, day and night photography, side-looking airborne radar (SLAR), and infrared (IR) missions. The analysis and production section of the division G2 processes and collates data from prisoners, long range reconnaissance patrols, agents, stay-behind units, technical intelligence reports, aerial photo/SLAR/IR reports, SIGINT data, and all other available reports, to produce *all-source intelligence*. The collation of data produces both tactical intelligence and targeting information. Targeting information is passed directly to the division FSE. The FA intelligence officer (AIO) in the FSE maintains liaison and coordinates with the division G2 element for target intelligence. He expedites target intelligence flow into fire support planning

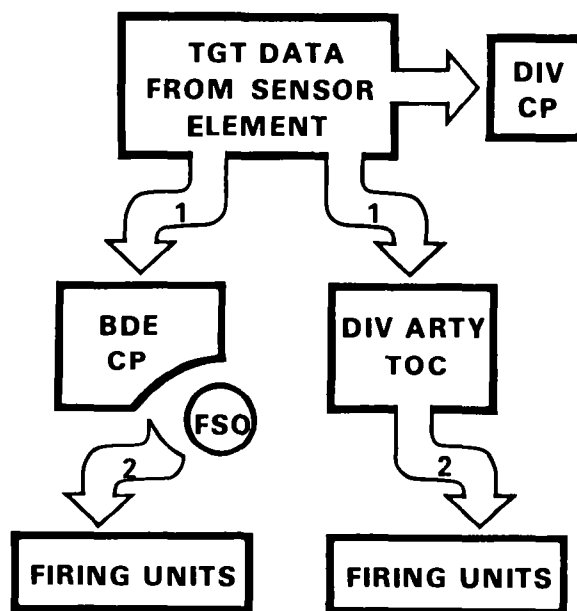


Figure A-4. Example of event-triggered reporting.

channels; coordinates the FA target acquisition effort with the G2's collection plan; coordinates cueing of FA target acquisition systems and their integration with other intelligence systems; and keeps analysis and processing personnel informed of FA timeliness and location accuracy requirements. He also insures that FA developed target information is passed to G2 elements for intelligence processing.

c. Maneuver Unit

Maneuver units can be lucrative sources of targeting information. Brigade and battalion S2 sections produce intelligence from prisoner interrogations, patrols, visual observations by the individual soldier, crater analysis, ground surveillance radars, aircraft pilots and crews, combat outposts, and many other sources. The FSO at the maneuver CP maintains liaison with the S2 and his section so target intelligence is sent to the appropriate fire support agency at the same time it is put into general intelligence channels.

A-8. Requesting Target Information

a. The collection agencies mentioned above may, of their own volition, seek and provide some targeting information. However, to achieve maximum efficiency, the agencies *must be stimulated* to look for the targets of most significance to the commander. There may be conflicting requirements for EW collection assets between the FSCOORD and other requesters. Therefore, priorities for the collection of information are determined by the commander. When requesting intelligence, the requester should provide the collection agency as much information as possible in order to economize on the already overtaxed assets, insure the highest probability of target detection, and enhance the source's survivability.

b. The request should include, if possible:

- ☐ Type of target being sought (must be specific and keyed to the mission).
- ☐ Probable area of search.
- ☐ Best time to look (cueing information).
- ☐ Desired target location accuracy.
- ☐ Other target parameters (time needed, etc.).

For example:

- ☐ Looking for enemy artillery command observation post.

- ☐ Vicinity Hill 609 grid 587379.

- ☐ Require 0-150 CEP accuracy.

c. The following are examples of the FSCOORD's specific intelligence needs:

- ☐ Where are the enemy artillery command observation posts?

- ☐ Where are the enemy 122-mm multiple rocket launchers?

- ☐ Where does the enemy store his nuclear weapons?

d. The necessary target location accuracy can be estimated by considering expected target size and vulnerability, terrain, attack weapon accuracy and lethality, and other known factors. An effective target acquisition program requires aggressive implementation by all concerned. The lines of communication for passing intelligence and target information vertically and horizontally throughout the levels of command from company to corps must be kept open. Moreover, both intelligence and target acquisition personnel must share information. In the final analysis, the effectiveness of the target acquisition system is measured by how fast it provides accurate, timely target locations to be attacked.

Appendix B The Field Artillery System

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Appendix B

The Field Artillery System

WHY

- ☐ Field artillery (FA) will provide the commander the major portion of his required fire support on the battlefield. To effectively integrate FA fires into the total fire support of the force, the force commander and FA commander must understand what the FA system is, what it can and cannot do, and how it operates.

WHAT

- ☐ This appendix describes the:
 - ☐ FA system;
 - ☐ tasks;
 - ☐ capabilities and limitations;
 - ☐ command and control;
 - ☐ organization;of the field artillery system.

B-1. General

The mission of the field artillery is to destroy, neutralize, or suppress the enemy by cannon, rocket, and missile fire and to integrate all fire support into combined arms operations.

To provide responsive, accurate fire support at the right time and the right place, both the maneuver commander and the field artillery commander must understand FA capabilities and limitations.

B-2. The Field Artillery System

Successful FA support is the product of effective integration and maximum employment of the four elements of the FA system (fig B-1) from the time a target is acquired until ordnance is delivered in support of the maneuver elements. These four elements are:

- ☐ Target acquisition
- ☐ Gunnery
- ☐ Weapons and ammunition
- ☐ Command and control
 - a. Target Acquisition.

Target acquisition provides the timely detection, identification, and location of targets in sufficient detail and to sufficient accuracy to allow their attack. Because of the fleeting nature of today's targets and the limited number of FA weapons, there is a critical need for effective first round fires. The vulnerability of our firing units to detection and attack by opposing forces reinforces the need for responsive and accurate target acquisition information. This enables the FA to reduce firing signatures by reducing rounds fired in adjustment. Some organic FA target acquisition means are observers (ground and air), radars, and sound and flash equipment. The division artillery TOC coordinates the use of all these FA target acquisition assets and merges them with all source intelligence to produce targets. For a discussion of FA and other target acquisition systems, see appendix A.

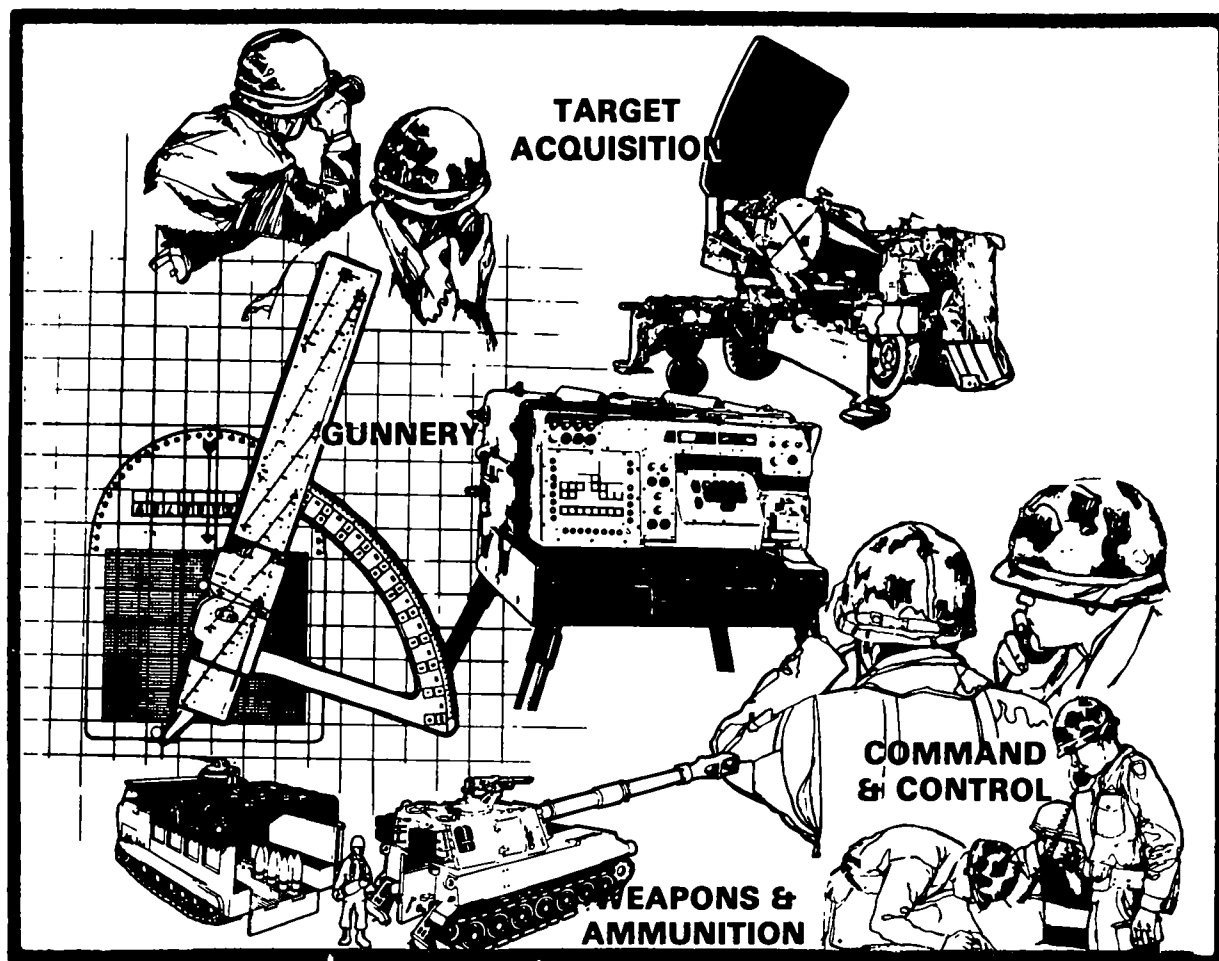


Figure B-1. The field artillery system.

b. Gunnery.

Converting calls for fire into firing data is gunnery. It includes:

Automatic Data Processing (ADP). ADP speeds up the delivery of fires, insures greater accuracy and efficiency of these fires, and establishes better control of ammunition. FA needs for ADP are great because of the vast quantity of information it must process to support a force and react responsively. The FA digital automatic computer (FADAC) is in service and the tactical fire direction system (TACFIRE) is soon to be fielded.

Survey. Survey provides accurate location and directional control for weapons and target acquisition devices of the FA system. Survey establishes a common grid and direction that allows the massing of fires and the delivery of surprise and unobserved fires.

Meteorology. Meteorology (met) is provided to compensate for changing atmospheric conditions that affect projectile trajectories and the efficiency of some target acquisition equipment. In addition to FA ballistic met messages, the FA met section also produces sound ranging met messages, air weather service messages, and fallout prediction messages.

Analysis. Fire direction personnel determine the type of ammunition, number of tubes/firing units, and the method of fire required to attack targets. They also consider firing unit status, ammunition availability, and the nature of the target. The fire direction officer will recommend alternate means of fire support if the target is not appropriate for FA attack, or if the target is such that multiple fire support means are required for target attack. Analysis is a combination of both technical and tactical considerations.

c. Weapons and Ammunition.

Appropriate combinations of weapons and ammunition are used to meet the changing needs of supported forces and the situation. These include high and low angle cannon fires, and rocket and missile fires, with appropriate munitions selection based on desired effects on targets, ammunition availability, signatures of delivery systems, and weather. (*Refer to tab A.*)

d. Command and Control.

Command and control permits the effective employment of FA assets. It includes:

Tactics. Tactics are developed to insure that responsive and effective fires are always available for the ground-gaining arms.

Organization. FA organization is flexible and tailored to meet the fire support needs of ground-gaining elements, and includes the necessary planning, controlling, and coordinating elements to integrate all fire support into the combined arms operation.

Fire Support Planning and Coordination. These are the links that provide the integration of FA with all of the means of fire support and with the battle plan of the supported maneuver force.

Communications. The effectiveness of fire support relies heavily on the adequacy of its communications. Communications bring the requester and provider together and is the means by which control and coordination of combat power is exercised. Communication and ADP complement each other in the FA system.

B-3. FA Responsibilities

The FA has a dual responsibility in contact:

a. Providing fires in support of maneuver actions and as a part of the overall fire support effort.

□ Close support to maneuver units in combat.

□ Counterfire operations against enemy indirect fire systems.

□ Deep interdicting fires on enemy command posts, logistical installations, etc.

b. Providing fire support planning and coordination resources and facilities to all levels of a corps force—company to corps headquarters.

B-4. Field Artillery Tasks

a. Tasks to support the OFFENSE include

□ providing immediately responsive fires to lead company teams;

□ softening the enemy positions with a preparation;

□ providing planned massed fires at the critical time and place;

□ destroying, neutralizing, and suppressing enemy forces, weapons systems, facilities, and jammers;

□ causing enemy armor to button up and slow down;

□ isolating the breakthrough area with flanking smoke;

□ suppressing enemy indirect fire weapons with counterfire;

□ suppressing enemy air defense sites; and

□ supporting advancing troops.

b. Tasks to support the DEFENSE include

□ destroying, neutralizing, or suppressing enemy weapons in overwatch positions;

□ disrupting the continuity of enemy formations and isolating portions of attacking forces (infantry from armor);

□ destroying, neutralizing, and

suppressing enemy forces weapons systems, facilities, and jammers;

- causing enemy armor to button up and slow down;
- providing counterfires against hostile weapons systems;
- providing planned massed fires;
- suppressing enemy air defense sites;
- scattering mines in paths of attackers;
- supporting counterattacks;
- isolating attackers from their reinforcements; and
- denying areas to the enemy.

B-5. Capabilities and Limitations of FA

a. Capabilities.

To optimize FA employment and combat power, maneuver and FA commanders must capitalize on these capabilities:

Provide Fires Under All Conditions of Weather and Types of Terrain. The FA can provide fires in support of maneuver forces during the most adverse weather conditions and in all types of terrain: day, night, and periods of extremely thick fog; in jungles, behind hill masses, in the mountains, and in arctic regions.

Shift and Mass Fires Rapidly Without the Requirement to Displace. The greatest effect of FA is achieved by quickly maneuvering (shifting) the fires of widely separated FA firing units onto a target in surprise attack (massing). Successive volleys from the same weapon or unit give the enemy time to react and seek protection, but the simultaneous impact of a heavy volume of fires from several FA battalions is devastating. Maneuver and FA commanders must *think* massed fires by *multiple units of field artillery* to generate maximum combat power.

Add Depth to Combat. The field artillery's extended ranges provide the maneuver commander the ability to influence battles with firepower without moving the maneuver forces to the area of contact. It also provides

the necessary deep harassing and interdiction of the opposing forces second echelons and supply routes.

Fire a Variety of Conventional Shell/Fuze Combinations. One of the FA's greatest capabilities is its flexibility in providing a variety of munitions. The FA illuminating shell is one of the primary means of battlefield illumination. Smoke rounds can be employed to suppress weapons such as tanks, hostile observers, and antitank guided missiles (ATGM) that require line of sight. External fuel containers on enemy tanks can be punctured with airbursts of high explosive (HE) and set afire by white phosphorus. Improved conventional munitions (ICM) are particularly effective against personnel and lightly armored vehicles. The antipersonnel (flechette) munition can provide excellent close-in defense.

Deliver Nuclear and Chemical Fires. The munitions inventory includes toxic, chemical, and nuclear rounds for the commander's use in special situations.

Provide Continuous Support by Judicious Displacement. FA provides continuous support by displacing in one of three ways:

- By battalion. Usually this type of displacement is accomplished when another fire support unit takes over the fire support mission.
- By echelon. This method is an arrangement whereby the unit moves in two or more increments.
- By battery. Under this method each individual battery moves separately.

Is Mobile as Supported Unit. The organic field artillery of armored/mechanized divisions is self-propelled, the organic field artillery of infantry divisions is towed, that for the airmobile division is airmobile and the organic field artillery for the airborne division can be air dropped. The field artillery *must* be as mobile as the force it supports.

Provide Counterfire/Suppressive Fires. The FA uses a counterfire program to destroy

or suppress enemy indirect fire systems, to balance the adverse force ratios, and to increase the survivability of our own forces.

b. Limitations.

The FA has limitations that must be recognized and considered when planning for its use:

Limited Self-Defense Capability Against Ground and Air Attack. Consolidation of administration at battalion level has severely reduced battery personnel strength. The ability to man even a limited LP/OP warning system is questionable. This places a premium on the ability to displace quickly.

Limited Ability to Destroy Point Targets Without Considerable Ammunition Expenditure. FA weapons are an area fire system. The inherent probable error and large number of uncontrollable variables (weather, propellant temperature, ram, projectile, etc.) preclude FA weapons from being able to hit a specified point repeatedly. Munitions are being developed that will give the FA a tank-killing capability.

Firing Signature Makes It Vulnerable to Detection by Enemy Target Acquisition Assets. FA firing units are extremely lucrative targets, and their distinct audible, visible, and electromagnetic signatures make them highly vulnerable to enemy detection and attack. To offset this vulnerability and insure their survival, friendly FA units must employ active and passive defense measures such as abbreviated registrations, roving guns, and offset firing positions.

B-6. Command and Control of Field Artillery

Clearly defined, systematic, and positive command and control insures that the FA contribution to total fire support is responsive to the maneuver commander and is adequate to support his mission. Command and control of the FA is established through:

- command relationships,
- assignment of tactical missions
- organization for combat.

From these factors, the FA commander derives specific fire support responsibilities to the supported maneuver force. The fulfillment of these responsibilities—and ultimately the FA mission—depends on how well field artillery and maneuver commanders understand the organization and employment of FA.

B-7. Command Relationships

a. Organic Units.

Organic units are those forming an essential part of a military organization. Organic parts of a unit or organization are listed in its table of organization and equipment (TOE).

b. Assigned Units.

Assigned units are those placed in an organization on a relatively permanent basis. A commander exercises essentially the same degree of command and control over assigned units as he does over organic units.

c. Attached Units.

Attached units are those placed in an organization on a relatively temporary basis. Subject to the limitations imposed by the attachment order, the commander of the formation, unit, or organization receiving the attached element will exercise the same degree of command and control over attached units that he does over units organic to his command.

d. Operational Control (OPCON).

OPCON is a status used often between maneuver units, but rarely used to establish a relationship between a maneuver unit and an FA unit. OPCON generally has the same connotation as attachment but without any responsibility for administration or logistic support.

B-8. Standard Tactical Missions

The control of FA is exercised not only through the command relationships defined

above, but also through the assignment of tactical missions. FA tactical missions describe in detail the fire support responsibilities of an FA unit and establish the fire support relationship with a maneuver unit or another FA unit; they *do not* affect the organization structure and the command relationships that result from that structure.

Tactical missions are assigned by the force commander on the advice of the force FA commander in his role as the FSCoord. The *standard tactical missions* are direct support (DS), reinforcing (R), general support reinforcing (GSR), and general support (GS). The *inherent responsibilities* of each mission are shown in figure B-2.

An FA unit with a mission of—	Direct Support (DS)	Reinforcing (R)	General Support-Reinforcing (GSR)	General Support (GS)
1. Answers calls for fire in priority from—	1. Supported unit 2. Own observers* 3. Force FA HQ	1. Reinforced FA 2. Own observers* 3. Force FA HQ	1. Force FA HQ 2. Reinforced unit 3. Own observers*	1. Force FA HQ 2. Own observers*
2. Has as its zone of fire—	Zone of action of supported unit	Zone of fire of reinforced FA unit	Zone of action of supported unit to include zone of fire of reinforced FA unit	Zone of action of supported unit
3. Furnishes fire support team FIST /FSO**	Provides temporary replacements for casualty losses as required	No requirement	No requirement	No requirement
4. Furnishes LO—	No requirement	LO to reinforced FA unit HQ	LO to reinforced FA unit HQ	No requirement
5. Establishes communications with—	FIST chiefs, FSO's and supported maneuver unit HQ	Reinforced FA unit HQ	Reinforced FA unit HQ	No requirement
6. Is positioned by—	DS FA unit commander or as ordered by force FA HQ	Reinforced FA unit or as ordered by force FA HQ	Force FA HQ or reinforced FA unit if approved by force FA HQ	Force FA HQ
7. Has its fires planned by—	Develops own fire plans	Reinforced FA unit HQ	Force FA HQ	Force FA HQ

*Includes all target acquisition means not deployed with supported unit (radar, AO, survey parties, etc.)

**An FS section (FSO team) for each maneuver brigade/battalion/cavalry squadron and one FIST with each maneuver company/ground cavalry troop are trained and deployed by the FA unit authorized these assets by TOE. After deployment, FIST and FSO teams remain with the supported maneuver unit throughout the conflict.

Figure B-2. Inherent responsibilities of FA tactical missions.

a. Direct Support (DS).

An FA unit assigned a mission of direct support is immediately responsive to the fire support needs of a particular maneuver element, normally a brigade. The DS unit furnishes close and continuous fire support to the supported maneuver element and must coordinate its fires with those of the maneuver element. The commander of the DS unit positions his unit to conform with the supported maneuver commander's plans. To achieve cohesiveness in the combat arms team, the same FA unit should be habitually placed in DS of a particular maneuver unit. An FA unit with a DS mission remains under the command of the force FA commander. The essential feature of the DS mission is a one-to-one ratio between the FA unit and the supported maneuver unit. The DS mission is the most decentralized, demanding, and complex of the standard tactical missions; it is used most frequently to place an FA battalion in support of a maneuver brigade.

b. Reinforcing (R).

The FA *reinforces* other FA units that *support* maneuver units. When an FA unit requires augmentation of its fires to meet the fire support needs of a maneuver unit, the reinforcing mission is assigned to another FA unit to meet that need. An FA unit can *reinforce* only one other FA unit, but a reinforced FA unit *can be reinforced* by more than one FA unit. The reinforcing mission allows the FA or the force commander to increase tremendously the FA support of a subordinate unit without relinquishing complete control of his FA assets and without imposing major logistical and administrative support requirements on the subordinate maneuver commander. The reinforcing mission is decentralized, second only to the DS mission in degree.

c. General Support-Reinforcing (GSR).

The GSR mission requires the FA unit to

furnish FA fires for the force as a whole *and* to reinforce the fires of another FA unit as a second priority. A GSR unit remains under the control of the force FA headquarters, which therefore has priority of fires. However, because the inherent responsibilities of this mission dictate the establishment of liaison and communications with the reinforced FA unit, a quick fire channel is established for immediate response to the reinforced FA unit's need for additional fires. The GSR mission offers the force commander flexibility to meet the requirements of a variety of tactical situations.

d. General Support (GS).

An FA unit assigned the mission of GS provides FA support for the force as a whole and remains under the immediate control of the force FA headquarters. The GS mission provides FA immediately responsive to the needs of the force commander. A GS FA unit may not be effective in attacking some targets of opportunity since there is no direct communications link with the FIST at the maneuver company/troop. It is most effective against planned targets. The GS mission is the most centralized of the standard tactical missions.

The US Army, when conducting operations within the ABCA and the NATO alliances must be familiar with the FA tactical missions of its allies and conversely, allies must be familiar with the US tactical missions. QSTAG 217 and STANAG 2887 have been agreed to by the US and its allies. To sustain US implementation, figures B-2(a) and B-2(b) are included here. Minor US deviations, such as identifying the inherent responsibility for "Furnishes Forward Observers" as "Furnishes FIST" and designating division artillery battalions to also provide FIST/FSO as directed, are for information purposes when operating with a multinational force.

Artillery With a Tactical Task of	Answer Calls for Fire in Priority From	Establishes Liaison With	Establishes Communication With	Furnishes Forward Observer to (2)	Weapons Moved and Deployed by	Has as its Zone of Fire	Has its Fires Planned by	Nation to Which Terminology Applies
(a)	(b)	(c)	(d)	(e)	(f)	(g)	(h)	(i)
Direct Support	1. Directly supported formation/unit 2. Own observers 3. Force field artillery (1)	Directly supported formation/unit (battalion, regiment, and brigade)	The directly supported maneuver formation/unit	Each maneuver company of the directly supported formation/unit	Direct support artillery unit commander or as ordered by force field artillery HQ(1)	Zone of action of the directly supported formation/unit	Develops own fire plans in coordination with directly supported formation/unit	US
	1. Directly supported formation/unit 2. Any other formation/unit as authorized by the controlling HQ	Directly supported formation/unit	Directly supported formation/unit	Directly supported formation/unit	Next higher artillery HQ	Zone of action of the directly supported formation/unit or zone ordered by higher artillery HQ	The artillery formation/unit in direct support in conjunction with the directly supported formation/unit	UK-CA-AS
In Support	1. Supported formation/unit 2. Any other formation/unit as authorized by the controlling HQ	No inherent requirement	No inherent requirement	No inherent requirement	Next higher artillery HQ	Zone of action of the supported formation/unit or as ordered by higher artillery HQ	Next higher artillery HQ	UK-CA-AS
At Priority Call	1. Formation/unit to which placed at priority call 2. Any other supported formation/unit 3. Any other formation/unit as authorized by the controlling HQ	No inherent requirement	No inherent requirement	No inherent requirement	Next higher artillery HQ	Zone of action of the formation/unit to which placed at priority call or as ordered by higher artillery HQ	Formation/unit to which placed at priority call	UN-CA-AS
General Support	1. Force field artillery HQ(1) and target acquisition artillery 2. Own observers	No inherent requirement	No inherent requirement	No inherent requirement	Force field artillery HQ(1)	Zone of action of the supported formation/unit or zone prescribed	Force field artillery HQ(1)	US
General Support Reinforcing	1. Force field artillery HQ(1) 2. Reinforced artillery unit 3. Own observers	Reinforced artillery unit	Reinforced artillery unit	Reinforced artillery unit if approved by force field artillery HQ(1) Applies also to the provision of liaison officers	Force field artillery HQ(1) or reinforced artillery unit if approved by force field artillery HQ(1)	Zone of action of the supported formation/unit to include zone of fire of the reinforced artillery unit	Force field artillery HQ(1) or as otherwise specified	US
Reinforcing	1. Reinforced artillery unit 2. Own observers 3. Force field artillery HQ(1)	Reinforced artillery unit	Reinforced field artillery HQ	Upon request of reinforced field artillery unit Applies also to the provision of liaison officers	Reinforced artillery unit or ordered by force field artillery HQ(1)	Zones of fire of reinforced artillery unit or zone prescribed	Reinforced artillery unit	US

Tactical Tasks and Responsibilities for Control of Artillery (ABCA)

Notes: (1) Force Artillery Headquarters or Higher Artillery Headquarters
(2) The US will not furnish forward observers, but will furnish fire support teams (FIST).

FOLDOUT

B-8.2

Artillery With a Tactical Task of	Answers Calls for Fire in Priority From	Establishes Liaison With	Establishes Communication With	Furnishes Forward Observers to (2)	Weapons Moved and Deployed by (Positioned by)	Has as its Zone of Fire	Has its Fire Planned by	Nation(s) to Which Terminology Applies
(a)	(b)	(c)	(d)	(e)	(f)	(g)	(h)	(i)
Direct Support	1. Directly supported formation/unit 2. Own observers 3. Force field artillery(1)	Directly supported formation/unit (battalion, regiment, and brigade)	The directly supported maneuver formation/unit	Each maneuver company of the directly supported formation/unit	Direct support artillery unit commander or as ordered by force field artillery HQ(1)	Zone of action of the directly supported formation/unit	Develops own fire plans in coordination with directly supported formation/unit	BE, DA, FR, GE, NL, TU, US, IT
	1. Directly supported formation/unit 2. Any other formation/unit as authorized by the controlling HQ	Directly supported formation/unit	Directly supported formation/unit	Directly supported formation/unit	Next higher artillery HQ	Zone of action of the directly supported formation/unit ordered by higher artillery HQ	The artillery formation/unit in direct support in conjunction with directly supported formation/unit	CA, NO, UK
In Support	1. Supported formation/unit 2. Any other formation/unit as authorized by the controlling HQ	No inherent requirement	No inherent requirement	No inherent requirement	Next higher artillery HQ	Zone of action of the supported formation/unit or as ordered by higher artillery HQ	Next higher artillery HQ	CA, UK
At Priority Call	1. Formation/unit to which placed at priority call 2. Any other supported formation/unit 3. Any other formation/unit as authorized by the controlling HQ	No inherent requirement	No inherent requirement	No inherent requirement	Next higher artillery HQ	Zone of action of the formation/unit to which placed at priority call or as ordered by higher artillery HQ	Formation/unit to which placed at priority call	CA
General Support	1. Force field artillery HQ(1) and target acquisition artillery 2. Own observers	No inherent requirement	No inherent requirement	No inherent requirement	Force field artillery HQ(1)	Zone of action of the supported formation/unit or zone prescribed	Force field artillery HQ(1)	BE, DA, FR, GE, NL, NO, TU, US, IT

Tactical Tasks and Responsibilities for Control of Artillery (NATO)

Notes: (1) Force Artillery Headquarters or Higher Artillery Headquarters

(2) Applies also to the provision of liaison officers

(3) The US will not furnish forward observers, but will furnish fire support teams (FIST)

Artillery With a Tactical Task of	Answers Calls for Fire in Priority From	Establishes Liaison With	Establishes Communication With	Furnishes Forward Observers to (2)	Weapons Moved and Deployed by (Positioned by)	Has as its Zone of Fire	Has its Fire Planned by	Nation(s) to Which Terminology Applies
(a)	(b)	(c)	(d)	(e)	(f)	(g)	(h)	(i)
General Support Reinforcing	1. Force field artillery HQ(1) 2. Reinforced artillery unit 3. Own observers	Reinforced artillery unit	Reinforced artillery unit	Reinforced artillery unit if approved by force field artillery HQ(1)(2)	Force field artillery HQ(1) or reinforced artillery unit if approved by force field artillery HQ(1)	Zone of action of the supported formation/unit to include zone of fire of the reinforced artillery unit	Force field artillery HQ(1) or as otherwise specified	BE, DA, FR, IT, NL, TU, US
Reinforcing	1. Reinforced artillery unit 2. Own observers 3. Force field artillery HQ(1)	Reinforced artillery unit	Reinforced field artillery HQ	Upon request of reinforced field artillery unit(2)	Reinforced artillery unit or as ordered by force field artillery HQ(1)	Zone of fire of reinforced artillery unit or zone prescribed	Reinforced artillery unit	BE, DA, FR, IT, GE, NL, NO, TU, US
Reinforcing by Fire (Mutual Support)	1. Supported formation/unit and own observers 2. Force field artillery HQ(1)	Supported formation/unit and reinforcing artillery unit	Supported formation/unit and reinforcing artillery unit	No inherent requirement	Unit commanding officer or ordered by force artillery HQ(1)	Zone of supported formation/unit or zone prescribed by force artillery HQ(1)	Own FDC and reinforced artillery unit	FR

Notes: (1) Force Artillery Headquarters or Higher Artillery Headquarters
(2) Applies also to the provision of liaison officers
(3) The US will not furnish forward observers, but will furnish fire support teams (FIST)

e. Dedicated Battery.

An extension of the DS mission is to dedicate the fires of an FA battery to a maneuver company/team in the movement to contact. The FA battalion, once it has positioned the battery and placed it in the dedicated role, will have only minimal control of its activities. Figure B-3 shows the inherent responsibilities of a battalion with a DS mission and the specific requirements placed on the dedicated battery.

The total firepower of the *dedicated battery* is immediately available to suppress enemy direct-fire weapons. It has direct fire planning and coordinating channels with the

company/team FIST and uses preplanned data and abbreviated procedures to answer calls for suppressive and other FA fires. The brigade commander, advised by the DS battalion commander, must decide how many batteries he can dedicate without seriously degrading the overall support of the brigade. After considering the advice of the DS commander, the brigade commander designates the maneuver company/team to receive the dedicated battery; the DS battalion commander designates the specific battery to be dedicated. In making his decisions, each commander considers his mission, the terrain, FA assets available, unit preparedness, and target acquisition.

RESPONSIBILITY	DS MISSION	DEDICATED BATTERY
Answers calls for fire in priority from	1. Supported unit 2. Own observers ¹ 3. Force FA HQ	1. Supported unit 2. DS Bn ²
Has as its zone of fire	Zone of action of supported unit	Zone of the supported company/team
Furnishes fire support teams (FIST)	FIST to each maneuver company	As directed by DS Bn Cdr
Furnishes FSO/LO	FSO to each maneuver battalion and brigade of the supported unit	Supported company/team (by BC when possible)
Establishes communication with	FIST chiefs, FSO s and supported maneuver unit HQ	1. Supported unit (on its command net) 2. FIST (on dedicated net)
Is positioned by	DS FA unit commander or as ordered by force FA HQ	DS Bn Cdr
Has its fires planned by	Develops own fire plans	FIST and company/team commander

¹Includes all target acquisition means not deployed with supported unit (e.g., radar, AO, and survey parties).

²While the dedicated battery may shoot other missions, it should do so only in dire emergencies.

Figure B-3. Responsibilities and requirements, dedicated battery.

Generally, dedicated batteries will be required when contact with the enemy is expected. The transition may be either hasty or deliberate.

Hasty Transition. When maneuver forces need a dedicated battery on short notice, established SOPs will allow well trained artillerymen to respond quickly. Four key actions are required.

- The order for dedication must be authenticated by DS battalion FDC.
- The FIST chief and the battery FDC will be assigned a dedicated fire direction net. The DS battalion S3 will direct all other observers on this net to use another net.
- The FIST chief will inform the company/team commander that he has dedicated fire support and will send maneuver control measures and all other targeting data to the dedicated battery FDC (the battalion FSO will monitor this transmission).
- The battery FDC must monitor the maneuver company/team command net.

Deliberate Transition. Deliberate transition, which is more desirable than hasty transition, allows for early identification of the units involved and provides *maximum* time for planning, coordination, and transition into dedication. In a deliberate transition, the same four actions needed for a hasty transition must be accomplished. Additionally, the battery commander should personally coordinate with the company/team commander to insure mutual understanding of-

- the scheme of maneuver,
- the plan of fire support,
- call signs and frequencies, and
- exactly when dedication will start.

The actual transition may be keyed to a specific time, such as H-5 minutes, or a specific event, such as the lead maneuver element passing a phase line or reference point. It is imperative that the plan does NOT

call for positioning and dedicating the battery so early in the operation that the maneuver unit will move beyond the battery's range capabilities before contact with the enemy is anticipated.

The DS battalion S3 must continuously monitor the tactical situation to determine when a dedicated battery will not be able to accomplish its mission. He must either inform the brigade command element that dedicated support can no longer be provided or designate another battery to assume the dedicated support role if a battery becomes unable to accomplish its mission. If a backup battery is assigned, it must receive all of the required information (e.g., phase lines and targets) from the direct support battalion S3. The FIST chief should be told the new battery's location so that he and the company/team commander may consider effects of dispersion when engaging a target. In either case, the direct support battalion must always be prepared to augment the dedicated battery with fires from other units.

Within the brigade, several maneuver companies/teams may be advancing toward the enemy at the same time. Not all of these elements will require a dedicated battery. The DS battalion commander and the brigade commander must analyze the situation and determine guidelines for dedicating batteries and releasing batteries from dedication. Generally, dedicating batteries will be considered only when contact with the enemy is expected. The direct support battalion commander may change dedication from one battery to another because of personnel, logistic, materiel, or tactical considerations. Brigade command element approval is required to release the DS battalion from its requirement to supply dedicated batteries. This approval should be sought when a dedicated battery can no longer be supplied, when the mission of the supported maneuver company/team is changed and dedication is no longer required, or when the intensity of the battle reaches a level at which fire support requirements of the brigade as a whole

outweigh the need for providing dedicated fires to a single company/team.

When the direct support battalion provides dedicated batteries, reinforcing artillery units have added responsibilities:

(1) *Fires.*

Reinforcing battalions will deliver most of the brigade's planned fires and fire on targets of opportunity in zones other than that of the lead company/team. Because the battle should start in the zone of the lead company/team, reinforcing battalions must also be prepared to augment the fires of a dedicated battery.

(2) *Communications.*

To facilitate rapid delivery of fires, the DS battalion S3 may direct elements of the reinforcing battalion to communicate directly with a FIST observer or a dedicated battery FDC on a specified DS battalion radio net. It is not desirable for these elements to use a reinforcing battalion net because the FIST observer, the FSO, and the dedicated battery FDC would be forced to change frequencies. When this has to be done, the direct support battalion FDC can monitor the net on the reinforcing battalion LO's radio.

(3) *Dedication.*

Under rare circumstances, a battery of the reinforcing battalion may be dedicated. When this occurs, the DS battalion S3 must insure that this battery receives all necessary targeting data, receives a synopsis of the tactical situation, and enters the company team net, the dedicated F net, and the direct support battalion's CF net. Dedication of a battery results in a tremendous *increase* in fire support available to a selected company team and a significant decrease in the fire support available to the brigade as a whole. Accordingly, howitzer batteries are dedicated only in a movement to contact situation and then only rarely.

B-9. Nonstandard Tactical Missions

When a commander's intent cannot be conveyed with a standard tactical mission, a nonstandard tactical mission may be assigned. This is done by either issuing a mission statement along with explicit instructions on *each* of the seven inherent responsibilities or by giving a standard tactical mission and explaining how it has been changed. The following three examples illustrate the latter:

1-50 FA: R 1-10 FA; positioning authority retained by division artillery.

1-60 FA: GSR 1-20 FA; do not exceed 50 percent CSR to reinforce 1-20 FA.

1-70 FA: GS; provide LO to division artillery TOC.

The example below depicts the procedure for issuing a mission when more than one or two of the inherent responsibilities change.

1-80 FA augment the fires of 1-10 FA:

- ☐ Answer calls for fire in priority from 1-10 FA, 3-4 CAV, and division artillery.
- ☐ Zone of fire is to be assigned by division artillery.
- ☐ There is no FIST requirement.
- ☐ Establish liaison with 1-10 FA.
- ☐ Establish communications with 1-10 FA and 3-4 CAV.
- ☐ 1-10 FA will position (div arty approval required).
- ☐ Division artillery will plan fires.

B-10. Warning Order (On-Order Mission)

An on-order mission allows an FA unit to anticipate and plan an orderly transition from the current mission or status to a new status or mission. It also allows the unit to receive on-order fires to incorporate that fire support into its planning: 1-50 FA: GSR 1-40 FA; on order DS 1st Bde.

This on-order tactical mission (DS 1st Bde) tells the commander 1-50 FA that he will be notified when he is to assume a new mission. He may now make plans and take

preliminary actions to make the transition quickly and smoothly; for example, he would probably establish communications and liaison with the 1st Brigade and, if not already accomplished, send FIST's to the maneuver companies of the brigade.

B-11. Organization for Combat

FA is organized for combat to provide responsive and effective FA fires and to coordinate all fire support. The objective of organization for combat is to insure that each FA unit is in a tactical organization and is assigned a tactical mission. The FSCoord recommends and the force commander approves the organization of FA for combat after analyzing the-

- mission of the force,
- commander's concept of operation,
- amount and type of FA available,
- targeting sources available,
- plan for future operations,
- amount and type of other fire support available,
- weather and terrain,
- unit operational readiness, and
- availability of positions and ammunition.

Organizing for combat is the means by which the force commander allocates FA assets to meet his own needs for FA fires as well as the needs of subordinate elements. He must provide FA assets for close support—DS and R—of subordinate elements and retain adequate assets under his immediate control—GSR and GS—to influence the battle at the critical time and place. These are the guiding fundamentals for distribution of assets when organizing FA for combat:

a. Maximum Feasible Centralized Control.

FA is most effective when control is centralized at the highest level consistent with its fire support capabilities and the requirements for the overall mission.

Centralized control of FA permits flexibility in its employment and insures that effective support can be rendered to each subordinate element of the command and to the force as a whole. Each standard tactical mission represents a different degree of centralized control and a different degree of responsiveness to the committed units. Control of the FA with a force must be decentralized sufficiently to make some FA immediately responsive to the needs of the committed units, but some FA normally is kept responsive to the needs of the force as a whole. The *optimum* degree of centralized control varies with each tactical situation.

A high degree of centralized control is desired in a *defensive* situation. Since the enemy has the initiative, it is difficult to predict accurately when and where he will strike. Therefore, to insure that he has the ability to influence the action wherever it may develop, the force commander should retain more control of his FA through greater centralization.

A lesser degree of centralized control is required in an *offensive* situation because the supported force possesses the initiative. To assist the close combat elements in retaining this initiative and in maintaining the momentum of the attack, the force commander may grant subordinate FA commanders wider latitude so that the responsiveness of the FA can be more sharply focused on the fire support requirements of the maneuver elements of the force.

The standard tactical missions achieve varying degrees of centralized control. Centralized control is also exercised through the command structure when the force FA headquarters retains command of an FA unit, providing an added measure of flexibility to the force. Therefore, FA units normally are not attached to brigade-size or smaller maneuver units unless distance, communication problems, or other factors prevent the force FA headquarters from exercising adequate control. Attachment changes the command structure and reduces

the capability of the force FA commander to meet the requirements of the force commander. In terms of quantity and responsiveness, it makes essentially no difference to a maneuver brigade commander whether a battalion of FA is in direct support of his brigade or is attached to the brigade. From the force FA commander's point of view, it does make a difference. The force FA commander no longer exercises command or control over an attached unit and loses his capability to use that unit for total force fire support. If the direct support mission has been assigned, the force FA commander has third priority on its fires. He can position the FA unit and he can change the tactical mission if warranted by the situation and approved by the force commander. This gives the force FA commander the capability of regaining first priority on calls for fire in an emergency if the force commander desires and provides the most effective means of exercising control over the force FA.

b. Adequate Fire Support for Committed Combat Units.

FA fire support is made most responsive to committed maneuver elements through the assignment of the direct support tactical mission. The minimum *adequate* fire support for committed units is considered to be one FA battalion in direct support of each committed brigade. In no instance can there be more than one artillery unit in direct support of a maneuver unit. Additional support may be provided by other artillery units that have been assigned the mission of reinforcing or general support reinforcing to the direct support unit. Ammunition allocation insures the adequacy of this support. Some additional support can be gained from general support units by proper positioning.

c. Weight to Main Attack in Offensive or Additional Strength to Most Vulnerable Area in Defense.

This fundamental can be implemented in any of three ways.

(1) *Tactical missions of reinforcing or general support reinforcing can be assigned to provide additional, responsive fires to the maneuver forces in contact.*

(2) *FA units can be positioned and assigned directions of fire to concentrate their fires in the appropriate sector. In this manner, units with the mission of general support can add weight to the main attack or strength to the most vulnerable area.*

(3) *Ammunition may be allocated to provide for more support in the affected area.*

d. Facilitate Future Operations.

This fundamental is essential to insure success in the face of unforeseen circumstances and to insure that transition from one phase of the operation to another is smooth. This fundamental also can be implemented through the assignment of tactical missions, positioning of artillery, and allocation of ammunition. The assignment of an on-order mission allows a unit to anticipate a fire support need in a future situation. Another way to facilitate future operations is to modify the current tactical mission in accordance with anticipated requirements; for example, a mission may be modified to restrict the expenditure of ammunition in the current situation.

e. Immediately Available Fire Support for Commander to Influence Action.

The force FA commander should retain some immediately available GS/GSR fire support means with which the force commander can influence the action. Such means consist of units assigned the tactical mission of general support or general support reinforcing. These units are very responsive to the force commander since the first priority on their fires is to force FA headquarters.

B-12. FA Liaison

To provide effective FA fires to the supported unit and to integrate those fires

into the total fire support plan for the force commander requires

- close coordination and interface between the FA unit and the supported unit and
- an FA representative at the operations center of each echelon from company to corps to advise on FA and overall fire support.

To these ends, the FA organization and mission provides for the FA to establish liaison with the supported unit. FA liaison is established to

- insure mutual understanding,
- provide unity of purpose and action,
- exchange information,
- plan and coordinate integrated fire support,
- provide quick fire channels to the fire support systems, and
- establish communications between FA, other fire support elements, intelligence, and target acquisition sources.

There are three types of liaison established by the FA:

a. Command Liaison.

Through personal contact, FA commanders establish command liaison with supported and reinforced commanders. This type liaison is MOST effective because the FA commander hears directly the needs of the supported element.

b. Liaison by Liaison Officers and Fire Support Officers.

Liaison officers are provided in the TOE/MTOE of selected FA units. These LO's are sent to supported and adjacent headquarters to represent the FA commander on *FA matters only*. Examples of LO's are those found in GS-type FA battalions, FA brigades, and the division artillery headquarters. The *fire support officers* are organic to DS-type FA units and serve a dual function in the supported unit headquarters. They are the full-time coordinators of all fire support and are the FA commander's representatives in the supported headquarters for *FA matters*. FSO's are provided by the DS battalion to the

headquarters of the supported maneuver brigade and to the headquarters of all maneuver battalions of the brigade. (See the inherent responsibilities of the DS mission, figure B-2.) In the armored cavalry regiment, FSO's and their sections are organic to the headquarters and headquarters troop (HHT) of the squadrons and regiment. (For a more detailed discussion of the function of the FSO, see appendixes G and I.)

c. Staff Liaison.

Other FA staff officers conduct periodic visits to exchange information with their counterparts at other headquarters.

B-13. Ammunition Considerations

One situation that may confront the FSCoord is his inability to attack the large number of available targets because FA units are either moving to survive on the lethal battlefield or the firing unit is short on ammunition and is awaiting resupply. Another situation the FSCoord will face is how to *best* attack the target array with the *available* ammunition. To resolve these problems the FSCoord must have an elementary grasp of the terms "basic load," and "controlled supply rate." The field artillery *basic load* is that amount of conventional ammunition authorized for a unit to initiate combat and sustain itself until resupplied. The *controlled supply rate* (CSR), which replaces the available supply rate (ASR), is that rate of consumption that can be allocated, considering the supplies and facilities available for a given period. This is expressed in rounds per weapon per day.

The required supply rate (RSR) is the amount of ammunition expressed in terms of rounds per weapon per day estimated to be required to sustain operations of any designated force without restriction for a specified period. The RSR is determined by the FA S3 based on the FSO's target information available and expected future

operations. Tactical commanders use this rate to state their requirements for ammunition to support planned tactical operations at specified intervals. The RSR is submitted through command channels. It is consolidated by each commander at each echelon and is considered in subsequently determining the controlled supply rate within his command.

The FSCOORD's knowledge of the basic load for the FA units in his area of operation provides him with the knowledge of the mix (HE, ICM, SMK, etc.) and amounts of ammunition he can expect from those units. The CSR will mean more to him once he gets a feel for what an "average" expenditure is for a 24-hour period of offensive or defensive battle.

The basic load of a unit can and probably will change at the outset of an operation as a result of the type and intensity of combat expected. The CSR is a compromise of what is available in the area and what the FA needs for upcoming operations (the RSR).

While responsibility for actual ammunition on hand remains with the firing units, the man who "makes it happen"—the FSCOORD—must be aware at all times of what is available to him.

B-14. Missile Units

The FA tactical missions and their inherent responsibilities apply to missile units as well as cannon units. However, when assigning tactical missions, the following must be considered:

a. Lance.

Due to its greater range capability and its massive destruction potential, a Lance unit is normally assigned the mission of *general support*. This mission allows the force commander to exercise maximum control of the system's capabilities—both nuclear and nonnuclear. It also insures that the force commander will have a weapon system immediately available to him to add depth to

the battlefield and/or influence the battle.

Lance units are also suited for the assignment of a *general support-reinforcing mission*, specifically, to augment the fires of an artillery brigade or division artillery. By assigning a Lance unit the GSR role, the force commander has relinquished some of his control over the unit in order to provide his subordinates the means to fire Lance rounds allocated/assigned to their commands. The GSR mission is particularly applicable to the employment of the Lance nonnuclear warhead. This munition is effective against large, soft, rather stationary targets such as

- command and control complexes,
- logistics installations,
- air defense and surface-to-surface missile sites,
- airfields with parked aircraft, and
- choke points—bridge sites and defiles.

Rarely will the mission of *reinforcing* be assigned to a Lance unit. However, if the situation dictates that it is to the force commander's advantage to give up control of his primary long-range artillery, the Lance battalion is capable of fulfilling the inherent responsibilities associated with a *reinforcing* mission.

A *direct support* mission is inappropriate for Lance. Destructive power potential, larger circular error probabilities (CEP), and relative slower rates of fire preclude a Lance unit from providing the type of fire support required by committed maneuver units.

Calls for fire will be initiated by the fire support element of the supported force. The FSE will transmit the call for fire to the battalion over the command/fire net. Normally the battalion will select the battery to fire. However, in some instances the FSE may designate the battery to fire in order to achieve a specific effect on the target. The call for fire will then be converted into fire commands by the unit to fire and in turn transmitted to the firing platoon.

With respect to the *zone of fire*, all FA units (cannon and missile) may be required to fire

beyond the zone of action of the supported force. For example, higher headquarters may call for fires across unit boundaries into the area of an adjacent force or forward of their area of influence. Because of longer range capabilities, this possibility is much greater for missile units.

Positioning of missile units is critical due to their high priority as a target and their limited ability to defend themselves. Recommendations provided by the Lance battalion commander through the battalion liaison officer are used by the force FA commander in the selection of general position areas. It is the responsibility of the battalion commander to select specific battery locations and firing points. This information is forwarded to the force FSE for its use.

Although *liaison* is not required when employed in a GS role, corps missile units gain definite advantages by establishing liaison with the corps FSE. Recommendations on capabilities and limitations of the unit are given to the supported force commander and staff. The liaison officer also provides information to the missile battalion on the future plans of the supported force, changes in present situation, and other information to keep the battalion up to date and responsive.

The *fires* of Lance battalions will be planned by the FSE of the supported force. These fires, whether nuclear or nonnuclear, are included in the force fire support plan. Targets of opportunity are applicable for Lance units.

b. Pershing.

Pershing is normally controlled by the theater commander and is in general support of theater operations. A GSR mission may be assigned to support selected corps operations.

(1) *Reinforcing and direct support.* These missions are not appropriate for Pershing units.

(2) *Calls for fire.* Normally the calls for fire emanate from headquarters above the

corps. Should the mission of GSR be assigned, the corps field artillery section (FAS) processes the mission.

(3) *Zone of fire.* Pershing targets are usually located far beyond the corps battle area. For this reason Pershing units do not fire in zone in a tactical sense. The exception to this would be if Pershing is GSR to a corps.

(4) *Positioning.* Pershing units are given general position areas selected by theater. These areas are to the rear of the corps zone.

(5) *Liaison.* If assigned the GSR role, the Pershing battalion would provide an LO to the corps FAS.

(6) *Communications.* If assigned the GSR role, the Pershing battalion should establish communications with the reinforced unit.

(7) *Fires.*

□ GS. The theater commander plans the fires for Pershing.

□ GSR. The corps FAS plans and uses its allocation/assignment of the Pershing firing unit.

B-15. FA TOE Organizations

a. Corps Artillery.

Based on the mission assigned to the corps, FA cannon and missile battalions will be assigned to the corps along with a number of FA brigade headquarters to provide command and control of these battalions. (See figure B-4.) The corps commander, advised by the corps FSCOORD, assigns FA battalions to an FA brigade headquarters, forming an FA brigade that has been tailored for a specific mission. The primary purpose of FA brigades is to augment division fires and reduce span of control based on how the corps commander intends to fight the divisions. The corps commander, advised by the corps FSCOORD, allocates his FA assets by *attaching* the FA brigades to the divisions or by assigning the FA brigades a *tactical mission*, normally reinforcing the fires of the

division artillery. The corps may also allocate individual battalions to divisions, separate

brigades, or cavalry regiments for selected operations.

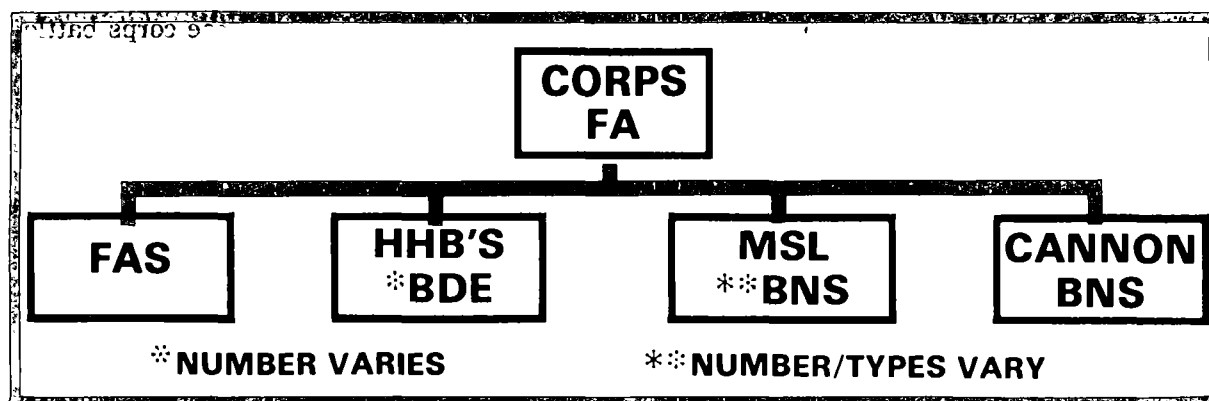


Figure B-4. Corps Artillery.

Lance battalions and brigades are normally retained under corps control to attack targets that can affect the corps mission.

An FA unit assigned to the corps and not further attached to subordinate maneuver units is termed *Corps Artillery*. FA assigned to corps and all other units organic, assigned, or attached to subordinate maneuver elements of the corps are termed *artillery with the corps* and include the FA of division, cavalry regiments, and separate maneuver brigades.

The corps FA section organic to the corps HHC, is organized as shown in figure B-5.

The operations intelligence element exercises control of *corps field artillery units* and the fire support element functions in the corps tactical operations center (CTOC) to plan and coordinate all fire support for the corps. The corps FSCOORD functions in two capacities. In the operations element, he functions as the commander of corps artillery, and in the FSE he is the corps FSCOORD. In these two capacities, his major fire support duties are:

- serving as the principal corps adviser on all fire support matters,
- providing guidance for and supervising the planning and coordination of all fire support assets available to the corps,
- recommending organization of corps artillery for combat,
- operating the fire support element in the corps TOC,
- recommending fire support means to attack surface targets,
- recommending locations for FA ammunition supply points/special ammunition supply points (ASP/SASP) and supply rates for FA ammunition,
- recommending fire support coordinating measures to be used,
- advising on hostile fire support capabilities,
- coordinating general position areas and fire planning for FA retained at corps level,
- coordinating movements of elements of corps artillery,
- developing nuclear weapons packages in coordination with the divisions, and
- providing training management for fire support training throughout corps.

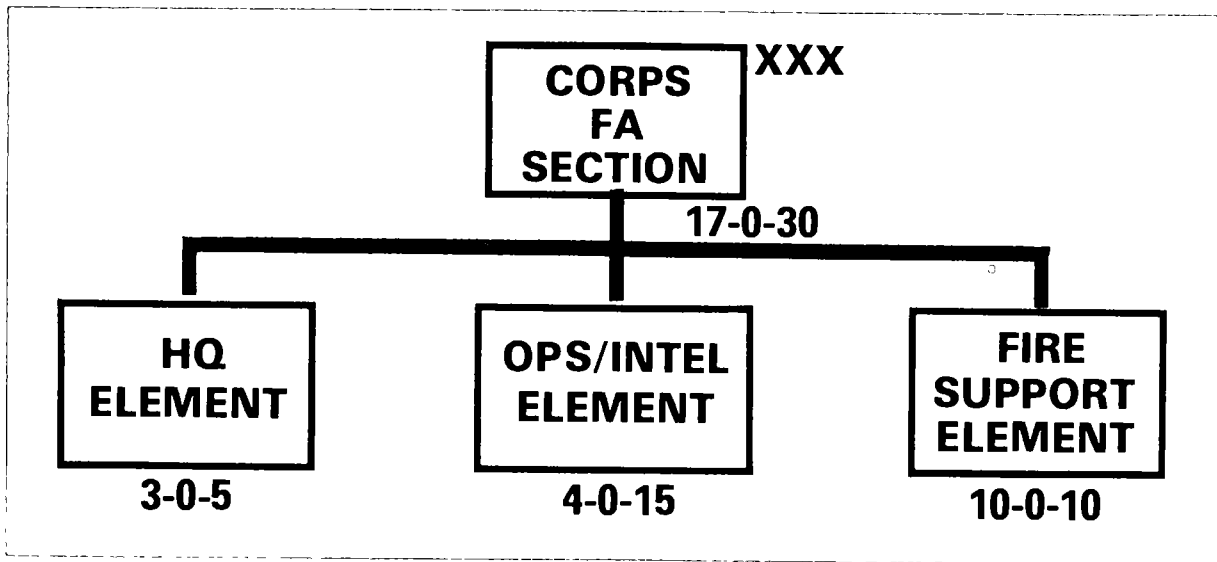


Figure B-5. Corps FA section.

There is no chain of command between the Corps FSCoord and the FA units of subordinate maneuver elements. FA instructions from the corps FSCoord to the

division artillery commander must be issued to the division commander in the name of the corps commander (fig B-6).

Direct channels are established between

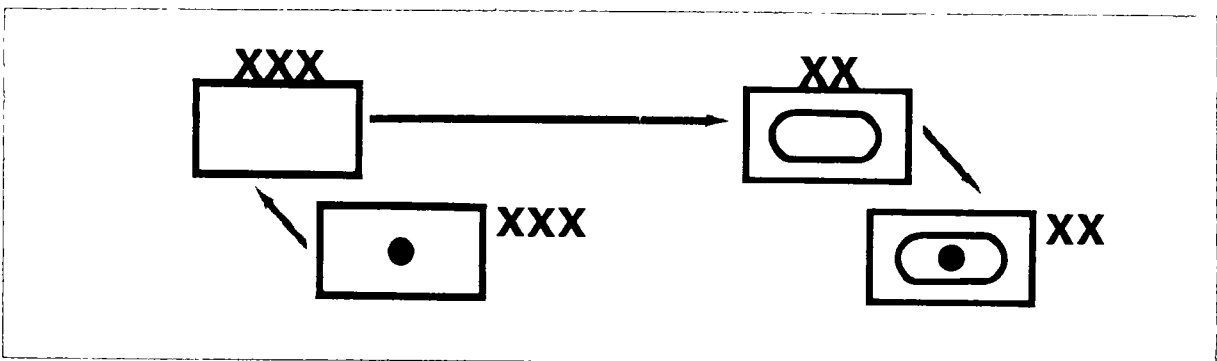


Figure B-6. Corps FA chain of command.

the corps and division artillery FSE's and between the corps operations/intelligence element and division artillery TOC for the planning and coordination of fire support. For a complete discussion of the FSE's and the fire support planning and coordination process, see appendixes G, H, and I.

b. FA Brigades.

Brigades are tailored by the corps

commander for a specific mission and may have up to six FA battalions attached. The FA brigades provide flexibility to the corps commander in organizing for combat and extending his span of control.

Figure B-7 depicts a type cannon FA brigade that has been tailored to provide mobility and representative calibers for the support of a division covering force.

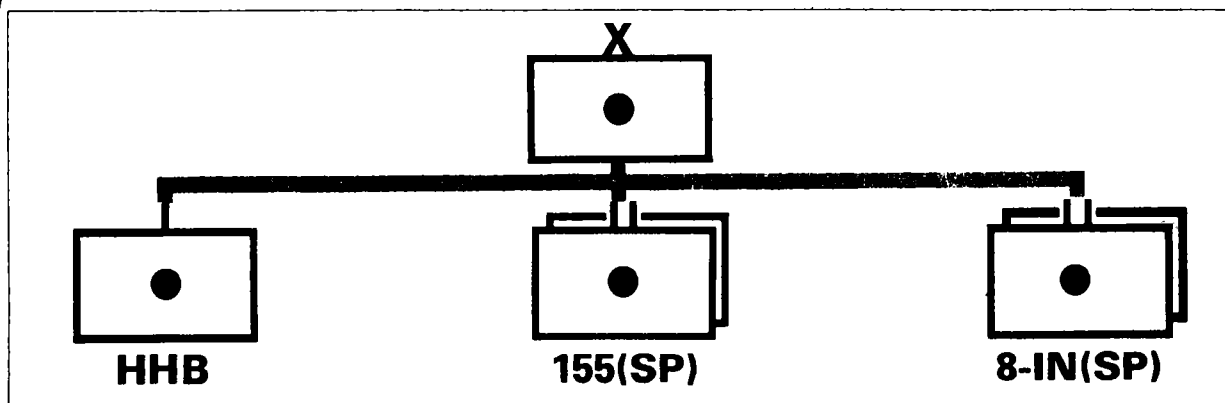


Figure B-7. Type FA brigade.

The FA brigade normally has no ground-gaining maneuver counterpart; therefore, its commander does not have the responsibility to serve on a special staff nor does he normally act as a FSCoord. His specific duties are

- augmenting fires of division artilleries based on his tactical mission or status;
- controlling elements attached by corps and coordinating elements of FA system relating to his organization;
- insuring flow of intelligence to and from outside agencies;
- maintaining liaison commensurate with mission; and
- coordinating general positions, fire planning, and displacements of own organization.

When practicable, an FA brigade should be habitually associated with a specific supported unit to provide cohesiveness of combat operations. The corps commander's needs and the military situation will dictate what he does with his artillery. If an FA brigade is available the corps commander will normally attach it to a division or give it the mission of GSR or reinforcing (R) a division artillery.

When an FA brigade is attached to a division, the brigade is able to function as an alternate division artillery TOC or assume the responsibilities of support of a maneuver brigade in a portion of the division zone. Also,

the FA brigade can function as the force FA headquarters for a covering force operation. Primary considerations in determining when to attach include

- the amount of immediately responsive FA needed by the divisions,
- the need for the corps to employ the fires of the FA brigade, and
- flexibility required to facilitate future operations.

If wide corps frontages, deep division sectors, speed of movement or distance make it difficult for corps to use cannon FA to influence the battle, then attachment may be desirable. On the other hand, if corps sees a need to exercise greater control of cannon units, or, if it is likely that the FA brigade will need to be shifted from one division to another during an operation, a GSR or reinforcing mission may be preferred. A GSR mission would keep positioning and fire planning authority at corps level, but would allow the division artillery to shoot the brigade without going through corps FAS. A reinforcing (R) mission would allow the reinforced division artillery to position, plan the fires of, and shoot the brigade, but it still would not tie up the FA brigade's battalions to the extent that the FA brigade mission could not easily be changed.

The weakness in both these situations is responsiveness. If the FA brigade has a GSR or a *standard* reinforcing mission, a

divisional DS battalion must go through *both* division artillery headquarters and the FA brigade headquarters to get fires from one of the FA brigade's battalions.

If neither attachment, GSR, nor a standard R mission seems desirable, the corps commander may achieve something of a balance in at least two ways:

(1) Modify the attachment order. For example, 42d FA Brigade attached to 1st Armored Division effective 131400Z. CG, 1st Armored Division do not employ elements of 42d FA Brigade east of the GREEN River.

(2) Modify the reinforcing mission in one of two ways:

(a) Tell the FA brigade and division artillery commanders to set up quick-fire channels.

(b) Allow the division artillery commander to assign to certain of the FA brigade's battalions missions of GSR or R division artillery or the divisional FA

battalions. For example, 1-41st FA (FA Bde) GSR 1-2 FA.

c. Separate Commands.

Armored cavalry regiments (ACR) and separate brigades have organic artillery units (one battery per squadron in the ACR and a battalion in the brigade). The fires of these separate commands may also be augmented by other FA units. When these commands are attached to a division, their organic FA units are normally attached to the division artillery to provide a more coordinated use of their fires in supporting the division's battle plan.

d. Division Artillery.

At division level, the division artillery is the tactical headquarters that commands and controls the organic FA and attached units. Unlike the corps artillery or FA brigades, the division artillery of each type division has its own organic FA battalions as shown in figures B-8 through B-11.

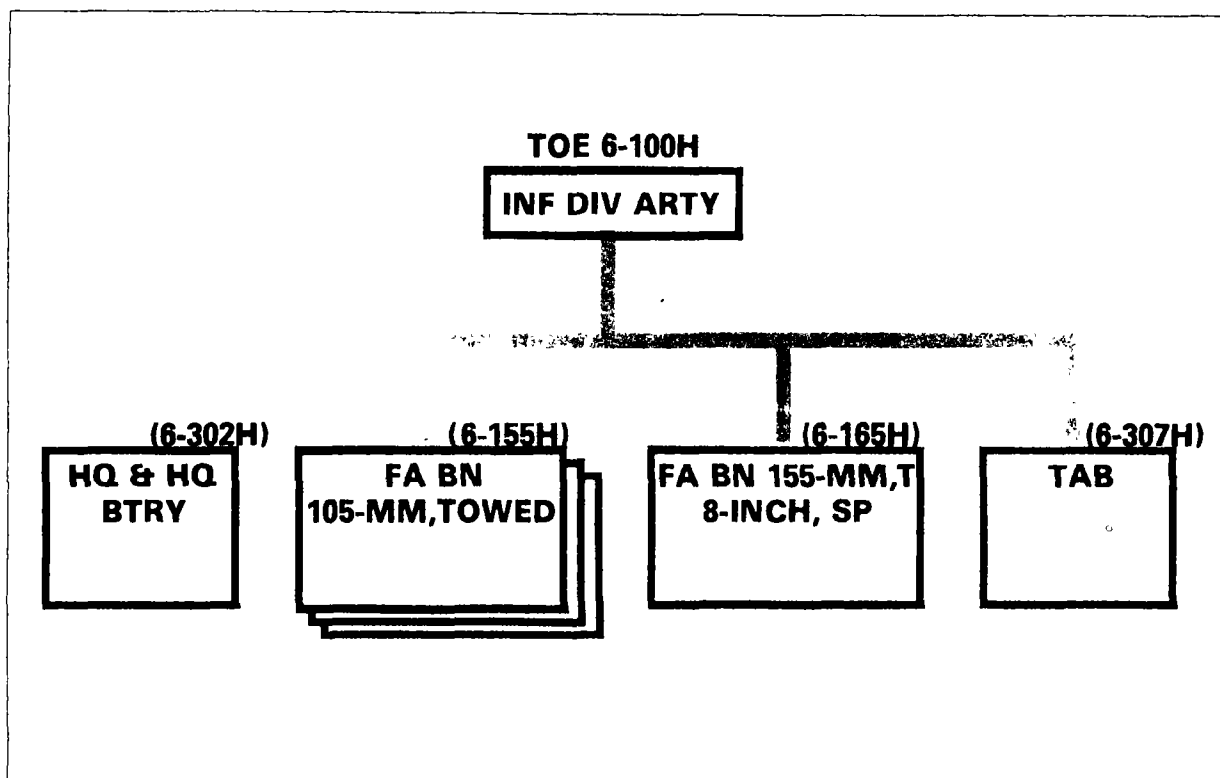


Figure B-8. Field artillery organic to infantry divisions.

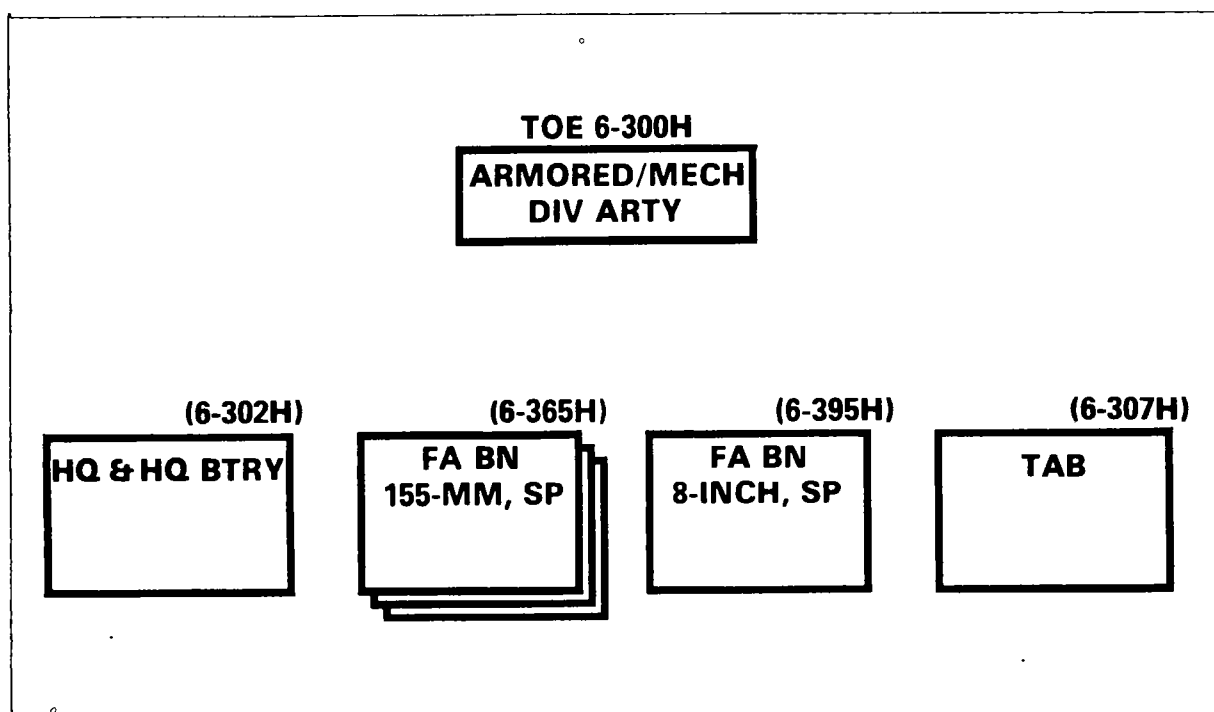


Figure B-9. Field artillery organic to armored and mechanized divisions.

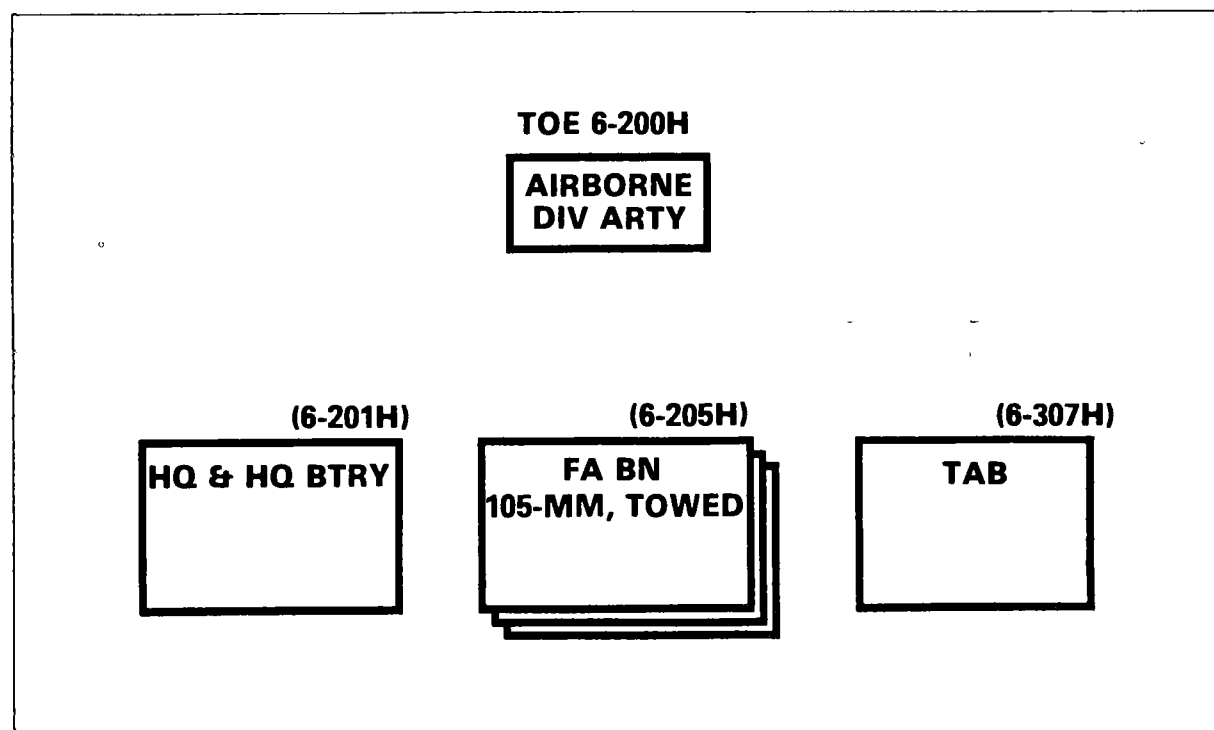


Figure B-10. Field artillery organic to airborne divisions.

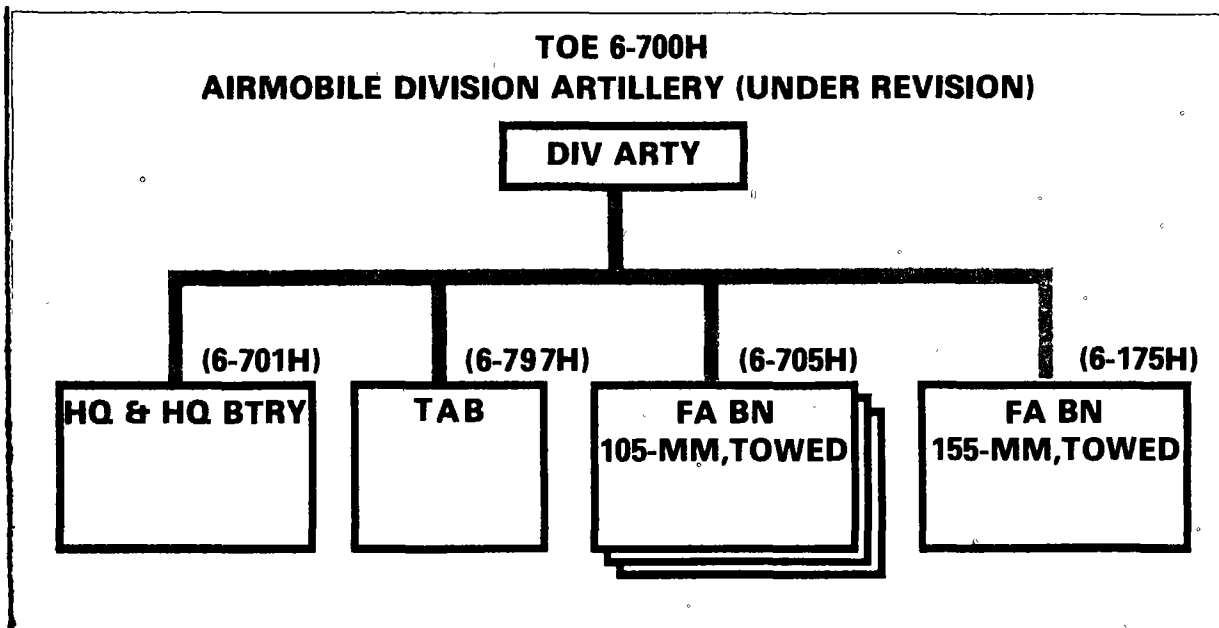


Figure B-11. Field artillery organic to airmobile divisions.

The division artillery establishes a division artillery TOC for the control of *FA fires* and two FSE s to plan and coordinate all fire support for the division. The MAIN FSE is located at the division MAIN CP and the TAC FSE is at the division TAC CP. (Appendixes G and I discuss these two FSE s and their roles in the fire support planning and coordination process.) The division artillery commander functions at

- the division artillery TOC as the commander of organic or attached FA units and
- the MAIN and TAC FSE s as the FSCoord of the division.

The division artillery commander is responsible for all FA support for the division. This is accomplished by the assignment of tactical missions to the FA battalions organic or attached to division artillery, and the effective use of augmenting FA fires allocated by corps artillery.

e. Battalion Group.

In the absence of an FA brigade or other suitable tactical headquarters, one FA

battalion may be attached to another FA battalion to form a battalion group. Battalion groups are formed for a limited period of time when it is desired to have one battalion exercise a degree of control over another battalion greater than that established through the relationship of a reinforcing battalion. It is advantageous to form a battalion group when the supported force—a brigade or brigade-size task force, for example—requires the fires of two field artillery battalions, but communications problems or distance prevent the force FA headquarters from exercising effective controls over the two battalions. Formation of a battalion group facilitates control and direction of fires under a single headquarters, thus providing unity of command. A battalion group normally does not exceed two units. When a battalion group is formed the following conditions apply:

- The battalion group headquarters functions only as a tactical headquarters for a *limited* period of time.
- The numerical designation of the

battalion group is the same as that of the battalion providing the group commander.

□ The commander is designated by the authority establishing the group.

□ When a DS battalion is one of the battalions formed into a group, the commander of the DS battalion normally is designated to command the group.

f. FIST, FSE.

These key fire support facilities have their origin with the FA system. However, even though they are part of the FA organization, they are in the business of managing *total* fire support. The discussion of these elements will be in appendixes G and I.



XXXXXXXXXX



Tab A to Appendix B: FA Weapons and Ammunition

B-A-1. Classification by Weapon

FA weapons are classified as cannons and missiles.

a. *Cannons* are classified by type as *guns and howitzers*.

- A *gun* has a relatively long barrel (over 30 calibers in length), normally a low angle of fire, and a high muzzle velocity.
- A *howitzer* has a medium-length barrel (20 to 30 caliber length), a relatively high angle of fire, and a medium muzzle velocity.

b. *Cannons* are further classified according to *caliber* by tube diameter. The diameter is normally measured in millimeters. One inch is approximately 25 millimeters.

- *Light*. 120-mm and less.
- *Medium*. 121-mm through 160-mm.
- *Heavy*. 161-mm through 210-mm.
- *Very heavy*. Greater than 210-mm.

c. *Missiles* are classified, by type, as *rockets or guided missiles*.

- A *rocket* is aimed by orienting the launcher; it cannot be guided further after it has been fired.
- A *guided* missile is subject to course

correction or alternation while the missile is in flight.

d. *Missiles* are further classified by *range characteristics*.

- *Short-range rocket*. Maximum range is less than 30 kilometers.
- *Long-range rocket*. Maximum range is 30 kilometers or more.
- *Short-range guided missile*. Maximum range is less than 100 kilometers.
- *Medium-range guided missile*. Maximum range is at least 100 kilometers, but less than 500 kilometers.
- *Long-range guided missile*. Maximum range is 500 kilometers or more.

B-A-2. Classification by Means of Transport

FA weapons are also classified according to their method of transport.

- *Towed (T)*. Weapons that are mounted on carriages designed to be towed or transported by a separate vehicle, generally termed a prime mover. A towed weapon may also be propelled by a mounted auxiliary propulsion means.
- *Self-Propelled (SP)*. Cannons and launchers that are installed on carriages that provide automotive power for the vehicle and weapon.

B-A-3. Characteristics of FA Cannons

WEAPON					
Characteristics	105-mm M101A1(T)	105-mm M102(T)	155-mm M114A1(T)	155-mm _{1/4} M109(SP)	155-mm ₍₂₁₁₁₃₁₎ M109A1(SP)
Maximum range (meters)	11,000	11,500	14,600	14,600	18,100 (chg 8); 14,800 (chg 7)
Combat weight (lb)	4,980	3,171	12,700	52,461	53,940
Traverse limits (mils)	409(R) 400(L)	6400	448(R) 418(L)	6400	6400
Elevation limits (mils)	-89 to +1,156	-89 to +1,333	0 to +1,156	-53 to +1,333	-53 to +1,333
Maximum rate of fire (first 3 min)	30	30	12	12	12
Sustained rate of fire (rd per min)	3	3	1	1	1 (after 60 min, 1 rd/3 min for chg 8.)
Water crossing capability	Floatable	Floatable	Fordable (30 in)	Amph (w/kit)	Amph (w/kit)
Time to emplace (min)	1.0	2.0	3.5	0.5	0.5
Prime mover	2½-ton trk CH-47 hel	2½-ton trk 1¼-ton trk CH-47 hel	5-ton trk CH-47C hel CH-54 hel	SP	SP
Reference manuals	FM 6-75 TM 9-1015- 203-12	FM 6-70 TM 9-1015- 234-12	FM 6-81 TM 9-1025- 200-12	FM 6-88 TM 9-2350- 217-10N	FM 6-88 TM 9-2350- 217-10
Ammo Type	HE, ICM, HEP, WP/HC/BE SMK	APERS, Illum, Agent	HE, Illum, Nuc, Agent, ICM, RAP, WP/HC/BE SMK		
Fuze Type	PD, BD, VT, MTSQ, CP, MTPD, VT, MTSQ, CP, MT				
Weight of HE Projectile (lbs)	33	33	95	95	95

WEAPON

Characteristics	155-mm M198	8-inch M110(SP)	8-inch M110A1(SP)
Maximum range (meters)	24,000 **30,000	16,800	20,600
Travel weight (lb)	15,000	58,500	62,100
Traverse limits (mils)	400 (R) 400 (L)	533(R) 533(L)	533(R) 533(L)
Elevation limits (mils)	-897 to +1278	+35 to +1,156	+35 to +1,156
Maximum rate of fire (first 3 min)	12	4.5	4.5
Sustained rate of fire (rd per min)	1	0.5	0.5
Water crossing capability	Fordable	Fordable (42 in)	Fordable (42 in)
*Time to emplace (min)	3.5	2.5	2.5
Prime mover	5-ton trk CH-47C	SP	SP
Reference manuals	TM 9-1025-211-10	FM 6-94 TM 9-2300-216-10	FM 6-94 TM 9-2300-216-10
Ammo Type	FASCAM	HE, HE-SPOTTING, NUC, Agent, ICM	
Fuze Type	ET	PD, VT, MTSQ, CP, MT	
Weight of HE Projectile (lbs)	95-103	200	200

*Time shown is that needed to emplace/lay a registering piece

** with RAP

B-A-4. Characteristics of FA Missiles

CHARACTERISTICS	WEAPON		
	PERSHING 1A	LANCE	HONEST JOHN
Minimum and maximum range (approx km)	185-740	8-110 (nuc) 8-65 (nonnuc)	5-38
Guidance	Inertial	Modified inertial	Ballistic
Propulsion	Solid propellant	Storable prepackaged liquids	Solid propellant
Prime mover	M757 5-ton, 8x8	M752 SP launcher**	M386 Launcher (SP)*
Field of fire (mils)	133 (R) — 133 (L)	285 (R) — 285 (L) (nuc) 400 (R) — 400 (L) (nonnuc)	533 (R) — 533 (L)
Launch elevation	+1,600 mils	48 and 54	0-1244 mils
Length of missile (meters)	10.39	6.17	7.6
Diameter (millimeters)	1,016	559	762
Missile weight (lb)	10,275	2,900 (nuc) 3,400 (nonnuc)	4332
Reference manuals	FM 6-39 (S) TM 9-1410-380-series	FM 6-42 (C) TM 9-1424-485-series	FM 6-59 FM 6-61 TM 9-1340-202-series

*Honest John also has an M289 SP launcher and an M33 towed launcher.

**Lance also has a towed M740 launcher zero length (LZL).

Tab B to Appendix B: Location of FA Battalions

TYPE WEAPON	CANNON					MISSILE		
	105 (T)	155 (T)	155 (SP)	8" (SP)	175 (SP)	HONEST JOHN*	LANCE	PERSHING**
NO. WPNS PER BN	18	18	18	12	12	4/6*	6	36
MECHANIZED/ ARMORED DIV			3BN	1BN		1BN*		
INFANTRY DIV	3BN	3BTRY***		1BTRY***		1BN*		
AIRBORNE DIV	3BN							
AIRMOBILE DIV	3BN	1BN						
SEPARATE MECH/ ARMD BRIGADE			1BN					
SEPARATE INF/ ABN BRIGADE	1BN							
ARMD CAVALRY REGIMENT			3BTRY					
FA BRIGADE	Up to six battalions Variable mixture by caliber and mobility based on mission							

*The Honest John is employed by allies. Normally, there are four launchers in divisional battalions and six in nondivisional units

**The Pershing missile is a theater weapon.

***Composite battalion



Appendix C

Mortars

PARAGRAPH

PAGE

C-1	General
C-2	Types of Mortars
C-3	Tactical Missions
C-4	Communications

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Appendix C

Mortars

C-1. General

a. Mortars are the organic indirect fire support of the maneuver unit. As such, they constitute the maneuver commander's "personal artillery." Although these weapons are controlled by maneuver elements, the FIST chief and the battalion FSO are responsible for integrating them into the overall fire support plan. Mortars are lightweight, can be positioned and employed with minimum expenditure of time and effort, and are effective against targets without armor protection. Mortars are most useful in neutralization of dismounted units, suppression, obscuration, and illumination roles. Because of their high-angle trajectory, mortars are excellent for attack of targets in defilade or on the reverse slopes of hills.

b. Some of the characteristics that provide mortars with desirable capabilities also create limitations:

- Mortar positions are seldom surveyed in and rounds fired in adjustment result in loss of surprise and greater ammunition expenditures.

- The high trajectory projectile is more easily detected by radar and adversely affected by strong winds that degrade accuracy.

- The high rate of fire required for firing illumination missions and smoke screens becomes a limitation when ammunition availability is considered. Maneuver elements are limited in the amount of ammunition they can carry, and resupply may be difficult especially in the covering force.

WHY

- To integrate mortars into the fire support plan, fire support leaders must know weapon capabilities and limitations.

WHAT

- This appendix tells you:
 - mortar characteristics;
 - types of mortars in maneuver elements;
 - tactical missions that may be assigned to mortars;
 - communications nets available;
 - characteristics of mortar weapons and ammunition.

C-2. Types of Mortars

a. The 60-mm mortar (currently found only in ranger units) provides a light, flexible indirect fire weapon for airborne, airmobile, and ranger forces.

b. The 81-mm mortar provides the commander flexibility to add momentum in the attack or to maintain the defense.

Product improved ammunition and fuzes add to the versatility; e.g., white phosphorus wick mixed with high explosive can provide both suppression and obscuration effects on a target. The direct lay method (firing without an FDC) increases responsiveness in fast moving situations; targets can be taken under fire within 2 minutes. The mortar can be employed in a full section (three tubes) or split into two smaller units to cover a broad front.

c. The 107-mm mortar, found in the mortar platoon of the combat support company, is currently the battalion

commander's organic indirect fire weapon. One mortar is also found in each platoon of the armored cavalry troop. It has the capability to respond rapidly to calls for fire and provide a high rate of fire. This mortar fires the best illumination and smoke currently found in Army mortars. In the battalion, the 107-mm mortars may be employed either as a platoon (four tubes), or as two sections of two tubes each. In cavalry troops, they may be held at platoon or massed at troop level. Additional characteristics of the various types of mortars and their ammunition are shown in figure C-1.

WPN	RANGE		AMMO	RATE OF FIRE	BASIS OF ISSUE
60-mm	MIN	MAX	HE *WP ILL	18 Sust 30 Max	2 Ranger Co*
	45	1771			
	34	1448			
81-mm	375	998	HE WP ILL	Charge dependent**	3/Inf Co (all types) 4/AmbI Bn (Cmbt Spt Co)
	70	4595			
	70	4595			
107-mm	100	2950	HE WP ILL CHEM (CS) HC***	2 Sust 20 Max	4/Bn (Armor, Abn, Lt Inf, Mech) 1/Cav Plt (AC Trp) (AmbI units do not have 107-mm)
	920	5650			
	920	5650			
	400	5490			
	1540	5650			
	920	5650			

*A new lightweight company mortar (60-mm) is in development. It is planned for issue to all nonmech infantry on the basis of 3/inf co. At the same time, the 81-mm will be issued to these infantry units on the basis of 4/bn.

**At the maximum charge, rates will be. 8 sust; 30 max.

***The ranges for HC are approximate.

Figure C-1. Mortar weapon/ammunition characteristics.

C-3. Tactical Missions

There are three standard tactical missions that may be assigned to mortar units. These missions are recommended by the FSCOORD based on the tactical situation, and assigned by the commander of the unit to which the mortars are assigned or attached.

a. General support (GS) is the routine relationship with the mortar platoon/section supporting the entire maneuver unit. This mission allows flexibility in shifting and massing fires, and it simplifies control and logistic support. This mission is preferred when centralized control is needed to permit delivery of fires to support all or a major portion of the unit throughout its zone or sector.

b. In direct support (DS) the mortars answer requests for fire support directly from one subunit (e.g., a maneuver platoon of the supported company). When not firing a DS mission for the subunit the mortars may respond to a request from another subunit. DS is the usual method of employment when the unit front is so broad that the mortars cannot give adequate support from one position. The mortar platoon is then split so part is in DS of one subunit and part in DS of another subunit.

c. In reinforcing (R), a mortar section will augment the fires of another designated mortar section. Occasionally, the uncommitted heavy mortar platoon from the reserve battalion or the mortar section of the reserve company will reinforce a mortar unit supporting a committed maneuver unit when the available ammunition supply permits.

d. A common compromise between GS and DS is to assign a mortar unit the mission of GS with priority of fires to one of the subunits. This provides the advantage of centralized control while arranging for one subunit to have priority on that mortar unit's fires. This is the normal mission assigned to battalion mortars.

e. When a mortar unit is *attached*, the commander of the unit to which it is attached

has operational control over the mortars as well as responsibility for logistical support. Mortars are attached to isolated maneuver units on separate missions when these missions are conducted out of range of the mortar platoon's initial location. Attachment, with its additional burden on the maneuver commander, should be avoided if adequate fire support can be provided by assigning a tactical mission.

C-4. Communications

a. Wire communications are the preferred method of command and control of mortar fire. However, the speed of modern combat may dictate that communication be with tactical FM radios. Several options for the use of available nets exist. These nets and the stations that will operate in them are discussed below.

Company Command Net. This net allows direct coordination between the platoon leaders, the company commander, and the FIST chief. Platoon leaders may request mortar fire on this net and the monitoring of it allows the FIST chief to remain abreast of the tactical situation. However, this is the least desirable net on which to call fire support of any type.

The Company Fire Control Net. The FIST HQ is the net control station (NCS) for this net. Normally, the bulk of fire support planning and coordination between platoon FO's and the FIST HQ is conducted on a face-to-face basis. However, when it is required to be conducted over an FM radio at company level, the CFC net should be used. This net may be used for the processing of fire missions from either the platoon FO's or the non-field-artillery observers and relaying them to selected FDC by the FIST HQ. Stations operating in this net are the forward observers and the FIST HQ. The battalion FSO may on occasion enter this net to contact the FIST chief.

The Company Mortar Fire Direction Net. The FIST HQ coordinates usage of this

net within the company. This net is the most desirable net on which to call for company mortar fires.

Battalion Fire Direction Net. In addition to the company level nets discussed above, there exists a maneuver battalion fire direction net for the battalion mortar platoon leader, FDC, and forward observers. The FIST chief may enter this net to request additional fire support.

The DS Battalion Fire Net. The FIST HQ will normally operate in the DS battalion fire direction net assigned (F1, F2, or F3). This allows direct coordination between the FA battalion and battery FDC's and the maneuver battalion FSO and the FIST chief at any time. The FIST may plan and coordinate indirect fire support from all sources on this net.

b. The organization and use of radio nets as they are presented here is not meant to

imply that this is the only way in which such nets may be organized and used. Rather, it is meant to provide the FSCoord at company and battalion levels with a description of the types of nets available for fire support planning and coordination of organic mortars and to outline a type organization for use of the nets.

c. The final decision on the operation of organic fire support nets at the company and battalion levels rests with the maneuver commander. But, the FIST chief and the FSO retain the responsibility for advising that maneuver commander on how best to employ his communication assets. To optimize the fire support potential of the maneuver unit's organic mortars, FSCoord's must fully understand the equipment available, its capabilities, and its limitations. For a detailed discussion of fire support planning and coordination, see appendix I.



Appendix D

Close Air Support

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Appendix D

Close Air Support

WHY

- The FSCoord must use CAS effectively as an integral means of fire support.

WHAT

- This appendix describes the:
 - definition/mission;
 - capabilities/limitations;
 - available aircraft/ordnance;
 - employment considerations;
 - FSCoord responsibilities;
 - control;
 - fire support planning; and
- request channels for close air support.

Section I. DEFINITION / MISSION

Close air support is defined as air attacks against hostile targets that are in close proximity to friendly forces and that require detailed integration of each air mission with the fire and movement of those forces. Each CAS mission is flown at the request of surface forces and is integrated with the fire and maneuver of surface forces. CAS is used when targets cannot be engaged satisfactorily with organic or attached fire support or when additional fire support is needed to achieve desired results. The surface force commander states the results he desires from CAS missions as "destroy, neutralize, or suppress."

In NATO literature (STANAG 3736 and ATP-27), CAS is one of the three elements making up offensive air support (OAS). The other two elements are tactical air reconnaissance and battlefield interdiction.

Types of CAS include:

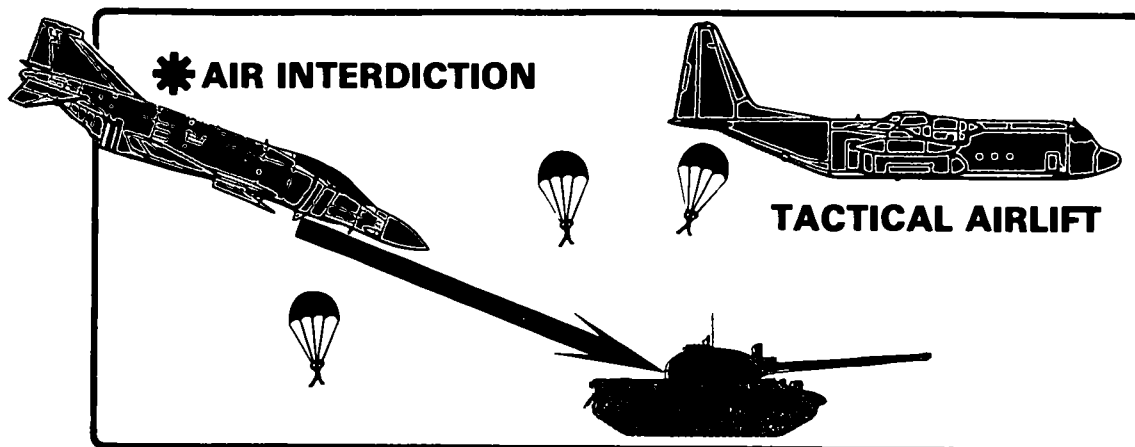
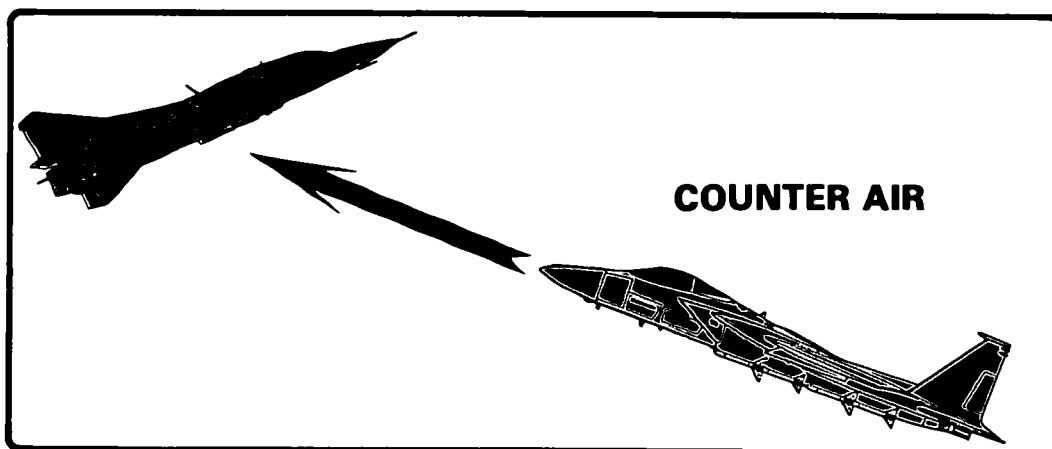
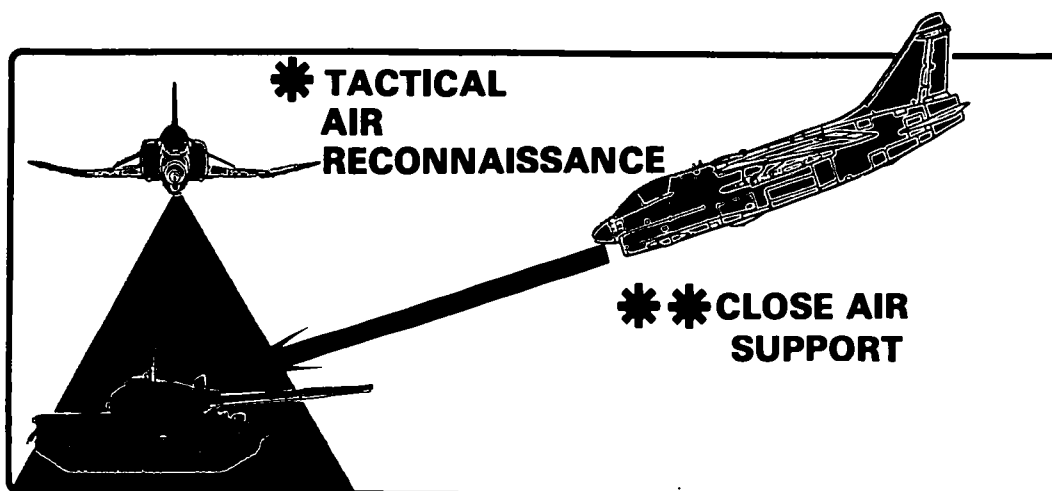
- Support of troops in contact (imminent contact, active contact, or recently broken contact).
- Softening objectives prior to friendly surface forces' advance, including landing zone and drop zone preparations, and striking shoreline targets prior to amphibious assaults.
- Escort missions, including convoy and column cover and escort of helicopters and watercraft.
- Attack of follow-on echelons.

CAS is provided by tactical air forces of the Air Force, Navy, Marines, and supporting allied air forces.

CAS is effective against hard and/or mobile targets and against enemy troop concentrations, fixed positions, and armored units.

D-1. Combat Roles of Tactical Air Support

Tactical air forces are committed to perform the following five missions (fig D-1).



*A portion of this effort is included in offensive air support (OAS).

**Forms a part of OAS.

Figure D-1. Tactical air support.

a. *Tactical air reconnaissance* is the use of tactical aircraft to obtain information on terrain; weather; and the disposition, composition, movement, installations, lines of communications, and electronic and communication emissions of enemy forces. The FSCOORD is interested only inasmuch as he generates requirements to look for something or wishes to know of things seen by the Air Force in his area.

b. *Close air support* is air action against hostile targets that are in close proximity to friendly forces and that require detailed integration of each air mission with the fire and maneuver of friendly forces. Those CAS missions within 1 to 5 km of the forward line of own troops (FLOT) normally require a forward air controller (FAC) to insure troop safety. Those CAS missions farther away from friendly troops may not require forward air control onto a specific target, although FACs may indicate likely target areas.

c. *Counterair* operations are conducted to gain and maintain air superiority, thereby preventing the enemy forces from effectively interfering with friendly surface and air operations. Counterair includes air action against enemy air defense positions.

d. *Air interdiction* is air operations conducted to destroy, neutralize, or delay the enemy's military potential before it can be brought to bear effectively against friendly forces, at such distance from friendly forces that *detailed* integration of each air mission with the fire and maneuver of friendly forces is not required. Air interdiction is initiated and executed by the Air Force. During actual operations there may be some overlap between air interdiction and CAS missions. See paragraph e below for further discussion.

e. *Tactical airlift* is the air movement of personnel and cargo by the Air Force available to the joint force commander. The FSCOORD is not involved in this role.

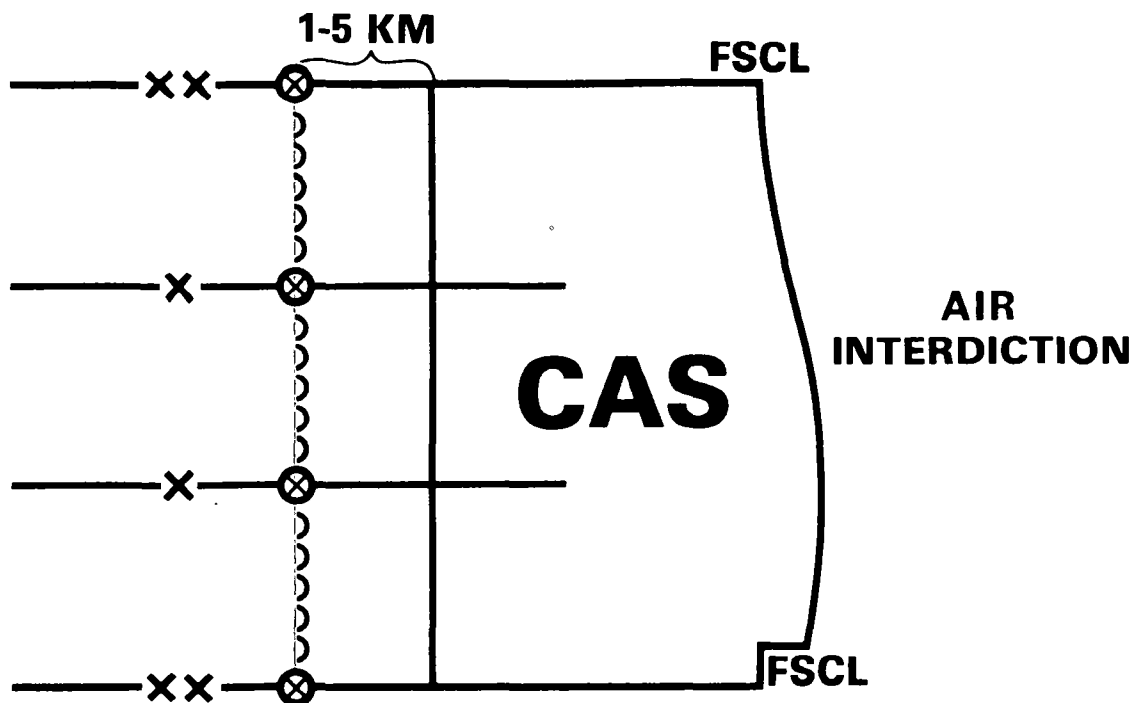


Figure D-2. Relationship of close air support and air interdiction.

The FSCL also helps to insure troop safety. All air attacks against ground targets short of this line must be coordinated with the appropriate ground force commander. The FSCL should be established as close to the forward elements as possible consistent with the tactical situation and its development. The FSCL must also be easily identifiable from the air. *For planning convenience*, CAS is normally planned short of the FSCL and air interdiction is planned beyond the FSCL as shown in Figure D-2.

During actual operations, however, the FSCL is not a clear-cut dividing line between CAS and air interdiction missions. Air operations against enemy combat forces deployed in depth will require the blending of air interdiction and CAS into a single cohesive operation extending from the FLOT to the enemy's rear echelons. The ground commander may employ CAS sorties as well as artillery fires beyond the FSCL. Coordinated air interdiction and counter air missions (e.g., air defense suppression) may be flown short of the FSCL. Those air interdiction operations which have a direct effect upon land operations must be coordinated and integrated with the ground commander's plan.

Each role of TAC AIR provides needed support in a specific area. However, in this discussion of the fire support coordinator's (FSCOORD) role on the battlefield, reference will be made *only* to the use of close air support. More information on the other tactical air functions can be found in FM 100-26.

Section II. CAPABILITIES AND LIMITATIONS

D-2. Capabilities

Tactical air forces provide the best fire support when maximum advantage is taken of their inherent strengths. Fire planners at all levels must exploit these strengths.

a. High Speed and Long Range.

The joint force commander can shift the mass of tactical air firepower from point to point on a theaterwide battlefield at short notice. The range (extended by aerial refueling) and speed of modern aircraft, coupled with centralized control, allow the joint force commander to focus tactical air firepower in support of maneuver commanders who have highest priority for fire support.

b. Versatility.

Tactical air forces provide close air support with a variety of weapons optimized for a broad range of targets. Every target on the modern battlefield is vulnerable to tactical air firepower. Close air support strikes are particularly effective against hard and mobile targets.

c. Delivery Accuracy.

Due to the variety of delivery techniques available and the guidance systems built into some air-delivered ordnance, first-round hit probabilities are high. Strafing, for example, can be employed 25 meters from protected friendly troops.

d. Excellent Air-Ground Communications.

Army and Air Force components both provide communications support for the air ground operations system (AGOS). These systems are parallel from battalion to theater. The Army portion of this system (wire, messenger, or radio) is used for requesting preplanned air support and for coordinating air operations with ground operations. The Air Force tactical air control system (UHF, VHF, HF-SSB, and FM radio) provides good communication for requesting immediate CAS (HF-SSB) as well as UHF and FM for controlling strike aircraft.

D-3. Limitations

Although CAS firepower can solve many problems for the maneuver commander, its use is subject to certain constraints.

a. Availability of Aircraft.

There seldom will be enough aircraft to

support all close air support requests. Consequently, maneuver commanders cannot have equal claim on close air support. Commanders and fire planners must insure that close air support is massed at the most critical points on the battlefield at the most decisive times.

b. Delivery Restrictions Imposed by Night and Weather.

Although tactical air forces possess target acquisition and computed weapons release systems that allow 24-hour, all-weather ordnance delivery, the optimum weapon for a particular target may not be employable under all conditions.

c. Delivery Restrictions Imposed by Air Defenses.

When faced with an intense array of surface-to-air missiles and antiaircraft artillery, close air support aircraft have two options:

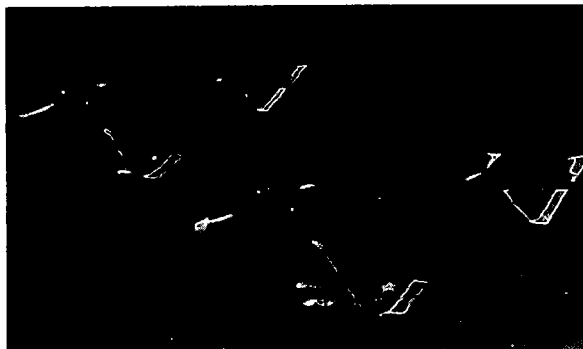
- (1) Deliver ordnance optimized for increased standoff ranges, which preclude use of certain short-range munitions or
- (2) Use low attitude penetration tactics and attack targets from a popup maneuver.

d. Time on Station and Delayed Response.

The primary CAS aircraft have varying capabilities to loiter on station which must be taken into account when planning their employment. This limitation is especially important when immediate air strikes are requested. Because of the unplanned nature of immediate air strikes, the aircraft which execute them must be scrambled or diverted from other missions. Their ability to loiter on station as well as their responsiveness may be reduced.

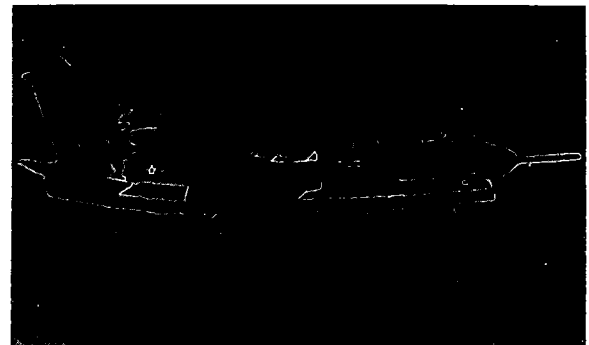
Section III. AIRCRAFT USED IN CLOSE AIR SUPPORT

According to current inventories, the primary CAS aircraft are the A-7, A-10, A-37, and F-16. When sufficient quantities are operational, the A-10 will be the USAF's primary CAS aircraft. Ordnance loads depicted represent maximum carriage capability and not necessarily typical combat loads. Aircraft that may be provided during CAS of ground forces include the following:



A-4 Navy/Marines

Subsonic, nuclear-capable aircraft; 9,000-lb ordnance load.



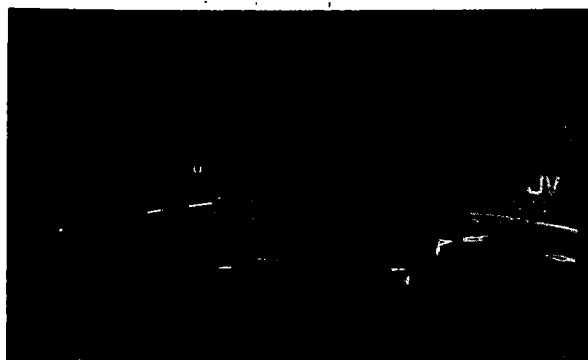
A-7 Air Force/Navy

*Subsonic ground attack aircraft; most accurate delivery; 15,000-lb ordnance load. FM communications**



A-37 Air National Guard/Air Force Reserve

*Subsonic, CAS version of primary trainer, 4,000-lb ordnance load. FM communications**



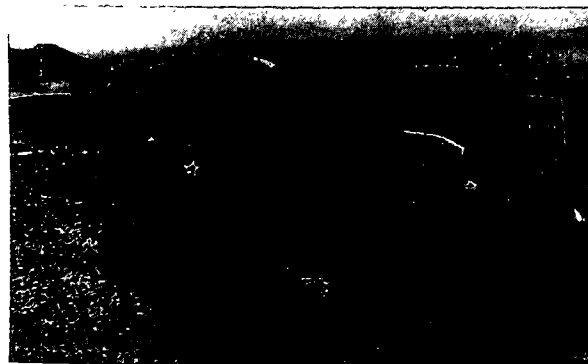
F-4 Air Force/Navy/Marines

Supersonic, nuclear-capable (except USMC), multimission aircraft, optimized for air-to-air combat; also has good air-to-ground capability; 16,000-lb ordnance load.



A-6 Navy/Marines

Subsonic, all-weather tactical bomber; 18,000-lb ordnance load.



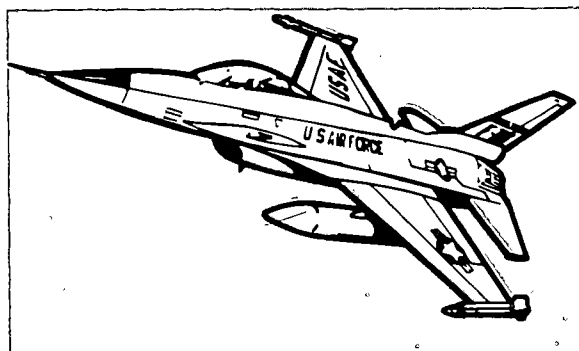
A-10 Air Force

*Subsonic aircraft specialized for CAS; 16,000-lb ordnance load; 30-mm gun. FM communications**



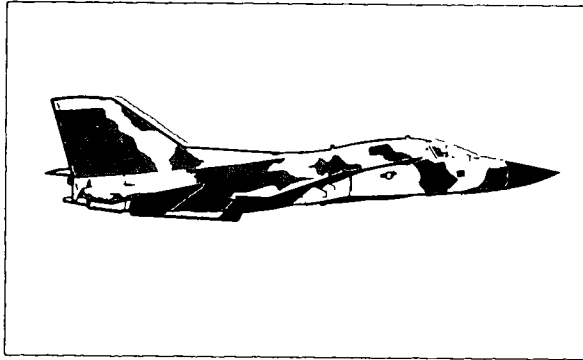
AV-8 Marines

Subsonic, vertical take-off-and-land CAS aircraft; 5,000-lb ordnance load; 30-mm gun.



F-16 Air Force

Supersonic, dual role (air superiority-ground attack) fighter; 8,000-lb ordnance load; extremely maneuverable. Will eventually replace the F-4.



F-111 Air Force

Supersonic, nuclear-capable tactical bomber; all-weather, day and night capability; 36,000-lb ordnance load. Primarily used for interdiction.

**The A-4, A-7, A-10, A-37, and AV-8 are the only aircraft with which the FIST chief can communicate directly when he controls an airstrike.*

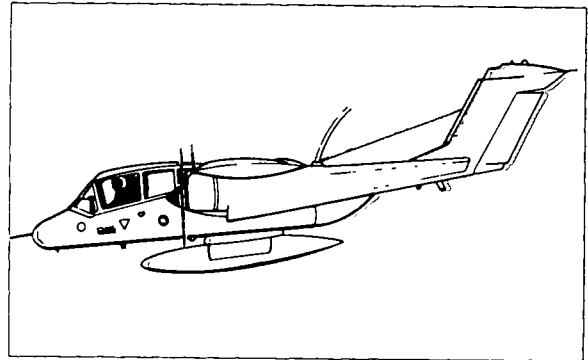
Section IV. CLOSE AIR SUPPORT ORDNANCE

D-4. Ordnance Characteristics

There are many different types, subtypes, and modifications of air-delivered ordnance. Each type of ordnance has characteristics that make it the best for a particular target. The ordnance considered most effective against the target will be loaded for preplanned strikes, subject to inventory and environment restrictions, carriage and delivery restrictions, and political restrictions. Ordnance effective against the most likely targets will be loaded on ground alert aircraft. Aircraft diverted to attack immediate CAS targets may have ordnance that is not optimized for the mission.

D-5. Guns

The 20-mm M-61 Vulcan cannon is the standard gun for fighter aircraft. This cannon has six rotating barrels and a



OV-10 Air Force/Navy/Marines

Subsonic observation aircraft with light strike capability; used by forward air controllers; 3,600-lb ordnance load.

maximum firing rate of 6,000 rounds per minute. The 30-mm GAU-8 cannon in the A-10 has seven rotating barrels and can fire 4,200 rounds per minute. The most commonly used types of ammunition are high explosive incendiary (HEI) and armor-piercing incendiary (API). Most fighters carry guns internally (F-4C and F-4D carry pod-mounted guns) that may be used for strafing. Strafing employs the pinpoint accuracy of the gun against personnel, light materiel, and vehicles. In addition, the 30-mm AP round can penetrate tank turrets.

D-6. Rockets

Fighters carry 2.75-inch rockets in 19-tube pods. The F-4 can carry as many as 15 pods (285 rockets). The Air Force uses rockets as an area coverage weapon, firing entire pods at once. Navy and Marine fighters also carry 5-inch Zuni rockets for point targets. Rocket warheads include 10-pound HE; high explosive antitank (HEAT), which incorporates a shaped charge; high explosive antipersonnel (HEAP), which features a good fragmentation pattern; flechette, which expels thousands of steel darts when the rocket motor burns out; and white phosphorus, which is used for target-marking and incendiary effect.

D-7. Cluster Bomb Units

A cluster bomb unit (CBU) consists of a container/dispenser loaded with bomblets. There are many types of dispensers, bomblets, and combinations thereof. Depending on the type and quantity delivered, bomblets are effective against area targets consisting of personnel, light materiel, and armor. Freefall dispensers are available for both low-angle and high-angle delivery and may be fitted with terminal guidance kits. Tactical air control party (TACP) personnel have information on specific types of cluster bomb units.

D-8. General Purpose Bombs

Bombs are available in sizes of 500, 750, 1,000, 2,000, and 3,000 pounds. The high-explosive charge, which ranges from 35 to 60 percent of the total bomb weight, is inclosed in a steel case. Bombs usually have both nose (instantaneous) and tail (delay) fuzes, with the fuzing option selectable from the cockpit for the particular target. Instantaneous fuzing is selected when maximum blast and fragmentation is desired. Short-delay fuzing is selected when penetration of hard targets or cratering is desired. Proximity (variable time and radar), long-delay, magnetic, and seismic fuzes are also available, as well as nose fuze extenders for maximum above-ground blast and fragmentation effect in swampy terrain. Bombs are available with both high-drag fins for low-angle delivery and low-drag fins for high-angle dive delivery.

D-9. Firebombs

Firebombs are thin-skinned metal tanks filled with thickened fuel (napalm) and equipped with white phosphorus or electrical igniters. Napalm has the consistency of

honey, clings to the target, and burns for up to 15 minutes. Firebombs are suited for a wide range of targets. Firebombs have very little blast and fragmentation effect, and can be used close to friendly troops. Unfanned firebombs produce a flame pattern consistent with the speed and altitude of the delivery aircraft. Heavy foliage reduces the flame pattern. Fanned firebombs are suitable for delivery from high-angle dive, but the flame pattern decreases as the dive angle increases.

D-10. Guided Weapons

Guided weapons allow destruction of well-defended point targets from outside some enemy air defense weapon ranges. Guided weapons are classified generally as bombs or missiles and are further classified by guidance systems. Since guided bombs have no propulsion system, they normally are used closer to the target than are guided missiles.

□ Laser guidance. The laser guidance system in a bomb or missile acquires and guides to a point illuminated (designated) by a laser beam. The designator can be on the delivery aircraft, or another aircraft, or on the ground. The laser beam must spotlight the target early enough for bomb acquisition and flightpath corrections and must stay on the target until impact. At present, 500 and 2,000 pound laser-guided bombs are available.

□ Electro-optical guidance. A television camera in the nose of the bomb or missile guides the weapon to a point of dark-light contrast on the target. This guidance system is limited to daylight use in reasonably good weather but has the advantage of "fire and forget." Examples of TV-guided weapons are the Maverick missile and the Hobo and Walleye bombs.

□ Antiradiation missiles. Antiradiation missiles (ARM) home on energy emitted by enemy radars and are used for air defense suppression. Examples are the Shrike and the Standard ARM.

D-11. Nuclear Weapons

FM 101-31-2 discusses the aircraft and the air-delivered nuclear weapons that are employed in a tactical role. The manual also outlines actual employment considerations and provides damage prediction data and limiting requirement data.

D-12. Chemical Agents

FM 3-10 discusses the employment of air-delivered chemical agents. The procedures for requesting air-delivered chemical munitions are the same as those for requesting any other close air support mission.

Section V. AIR-GROUND OPERATIONS SYSTEM

D-13. General

The responsibility for conducting air-ground operations is shared equally by Air Force and Army commanders. The Army and Air Force have parallel communications systems for coordinating tactical air support with ground operations. The AGOS includes the personnel, equipment procedures, and techniques comprising the *Army* air-ground system (AAGS) and the *Air Force* tactical air control system (TACS). The air-ground operations system provides the means to initiate, receive, process, and execute requests for air support and to disseminate combat information and intelligence provided by the Air Force. Although the components and agencies of the AGOS belong to different services, they function jointly in planning, coordinating, and integrating air support with ground operations. (See tab A.) While Army CAS operations are habitually associated with the Air Force, there may be times when Naval or Marine, or allied CAS is available to support

ground operations. When this situation occurs, a Marine TACP will be provided at battalion through division level from the air naval gunfire liaison company (ANGLICO). Use of allied CAS may require liaison representatives from the allied air force. For further discussion of the ANGLICO refer to appendixes E and I.

D-14. Army Air-Ground System

The Army air-ground system provides the ground force commander with the organization and means to process, evaluate, and coordinate requests for air support and tactical air reconnaissance, and for continuous exchange of combat information and intelligence with the Air Force commander. *The Army air-ground system extends through all Army echelons down to maneuver battalion.* Through this system, the ground force commander *integrates* surface fires with the fires of supporting tactical aircraft, and *coordinates* the reconnaissance and surveillance efforts of Army aviation with supporting tactical Air Force elements. The system is operated by staff personnel who have received specific training in air-ground operations. The G3 (S3) is responsible for general staff supervision of all air-ground operations except administrative airlift and reconnaissance and surveillance. Administrative airlift is the responsibility of the G4 (S4). Air reconnaissance and surveillance is the responsibility of the G2 (S2).

D-15. Tactical Air Control System

The Air Force tactical air control system *begins at* the Air Force component command level with the tactical air control center (TACC) and *extends through* all operating echelons. It is a system of personnel, facilities, sensors, and communications

through which the Air Force component commander (AFCC) plans, coordinates, and directs the resources available to him for the conduct of tactical air operations.

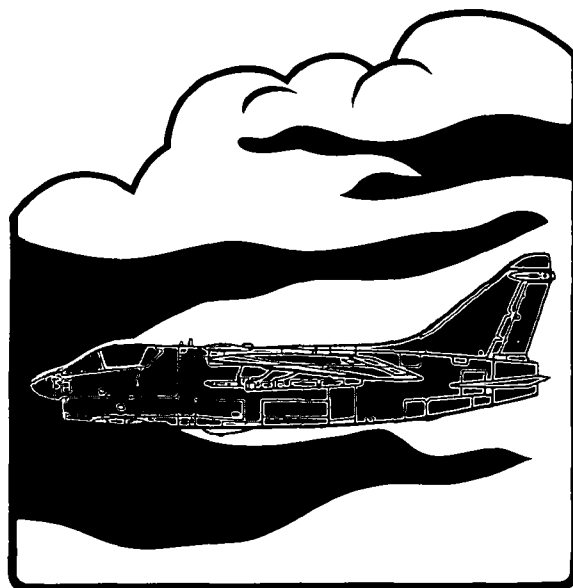
The tactical air control system is organized based on the principles of *centralized control, decentralized execution, and coordinated effort*. Centralized control of air assets provides the Air Force component commander with the capability to fully exploit the flexibility of assigned or attached air resources. However, through the use of the direct air support center (DASC), the Air Force component commander is able to conduct decentralized execution of air missions to insure effectiveness and enhance responsiveness. The activities of the tactical air control system are controlled by the tactical air control center, which is the senior air operations element of the tactical air control system.

D-16. Close Air Support

a. Close air support consists of air attacks against enemy targets that are in *close proximity* to friendly forces. To be effective, close air support requires detailed coordination with the fire and maneuver of ground forces. It must be responsive, integrated, and controlled. Typical targets are enemy troop concentrations, fixed positions, and armored units of immediate concern to ground forces.

b. Close air support missions are flown at the request of ground forces and can be initiated at any level of command. They are planned, directed, and controlled by the Air Force through the tactical air control system. They may be either *preplanned* or *immediate*. Preplanned requests like FA missions should be used to the maximum extent possible to match the delivery system and ordnance with the target. This insures better integration with the ground tactical plan. *Preplanned* requests are submitted through *Army channels* via the fire support elements at division and corps.

c. Requests for *immediate* close air support missions are submitted through the *Air Force air request net* operated by the tactical air control party. Immediate airstrikes are used against targets of opportunity that develop as a result of ground action. When possible, ordnance and aircraft are selected according to the nature of the target; however, the most readily available ordnance and aircraft are used. *Immediate* close air support missions are flown from sorties set aside for this purpose or by diverting *preplanned* or interdiction sorties.



D-17. Close Air Support Request and Coordination Channels

a. *Preplanned missions* are those for which a requirement can be foreseen. They permit detailed planning, integration, and coordination with the ground tactical plan. Typical preplanned missions are preassault bombardment and air interdiction of key bridges or lines of communication. Preplanned missions are most desirable from the standpoint of efficient utilization because munitions can be tailored precisely to the target and complete mission planning can be accomplished. Preplanned air request channels are shown in figure D-3.

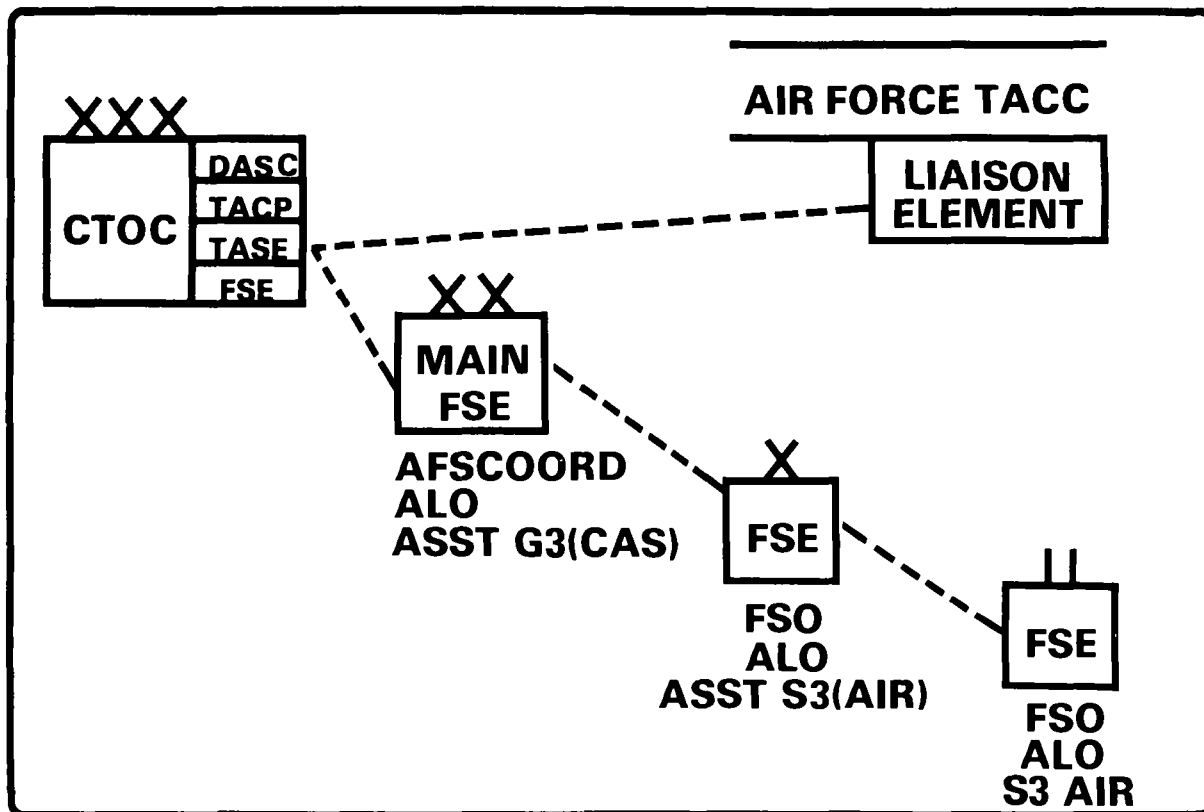


Figure D-3. Preplanned close air support request channels.

(1) Requests for preplanned missions originating at the maneuver company level are forwarded to the battalion FSE over the maneuver battalion command net or by any other means available. When a request is received at the FSE, it is reviewed by the battalion S3 air; the FSO; and the air liaison officer (ALO), the chief of the tactical air control party (TACP), to determine suitability of the target for air attack and to consider potential airspace conflicts. The FSO may attack the target with another system. At the minimum he will integrate CAS into his fire support plan. The S3 air adds the request to the file of requests for preplanned missions, eliminates duplications, consolidates the remaining requests, and assigns them a priority. He then forwards the consolidated requests to

the S3 air at the brigade FSE over the brigade operations/intelligence net.

(2) The brigade S3 air coordinates the requests with the FSO and ALO and integrates the requests with those of the other maneuver battalions. He eliminates duplications, assigns priorities, and forwards the requests to the assistant G3 for CAS operations at the division main command post.

(3) At division main, requests are processed in essentially the same manner as at brigade and battalion. Consolidated requests are coordinated by an assistant G3 for CAS with the division FSCoord, ALO, and division air defense personnel. They are

then forwarded to the corps G3 air.

(4) The corps G3 air evaluates the division requests; coordinates with the FSCoord, the ALO at the DASC, and the corps air defense personnel; assigns priorities to approved requests; and forwards them to the Army liaison element at the Air Force tactical air control center. The Army liaison element consolidates the theaterwide requests and passes them as Army requirements to the TACC. The TACC

assigns sorties in accordance with priorities established by the Army.

b. *Immediate missions* are executed in response to requests from supported ground commanders to fulfill urgent requirements that could not be foreseen. Details of the mission generally are coordinated while aircraft are airborne. The processing of immediate missions is accomplished primarily through Air Force channels (fig D4).

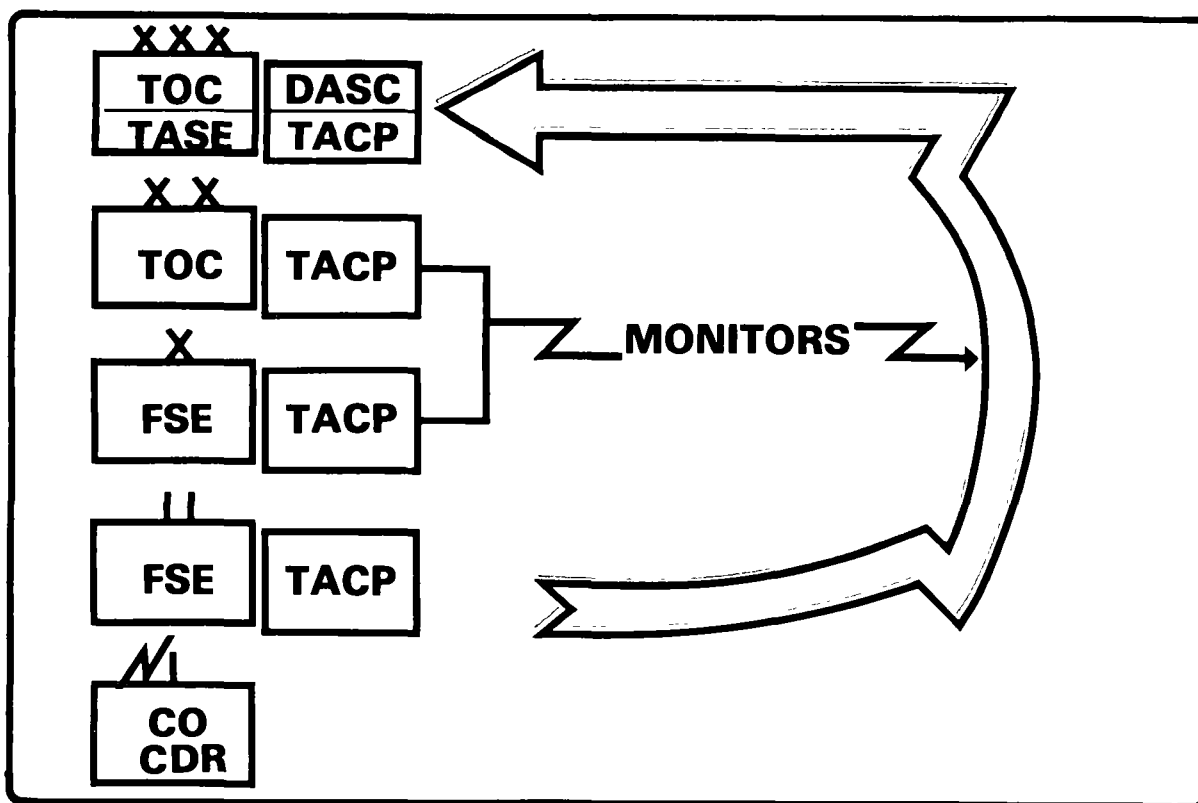


Figure D-4. Immediate air request channels.

(1) Requests for immediate missions that originate at maneuver company level are forwarded to the battalion FSE over the maneuver battalion command net or by any other means available. Each request is validated at battalion level by the S3 air,

ALO, and FSO and is then passed to the battalion tactical air control party of which the ALO is a member. The TACP transmits the request directly to the direct air support center (DASC) at corps tactical operations center (CTOC) over the Air Force air request net.

(2) The TACP at each intermediate Army echelon monitors the transmission. Each intermediate TACP coordinates the request with the S3/G3 air and the FSCoord at their levels to determine approval or disapproval of the request (normally determined by SOP). Silence by an intermediate TACP indicates approval by the associated Army echelon unless a disapproval is transmitted within a specified time period. If any echelon above the initiating echelon disapproves the request for any reason, the TACP at that echelon notifies the DASC and the initiating TACP, giving reason for the disapproval.

(3) The DASC passes a copy of the request to the corps G3 air in the collocated tactical air support element (TASE) for coordination with the FSCoord.

(4) When the request is approved, the DASC orders the mission flown. Immediate missions involve launching general alert aircraft using air alert sorties, and/or diverting aircraft from other missions.

D-18. Employment Considerations

A successful CAS strike begins with a well-coordinated plan. The general outline of the plan should be formulated before a CAS request is submitted, preferably during the planning stages of the maneuver operation itself. The details are confirmed or filled in as the situation develops. The request for CAS contains the elements necessary for Army decision, Air Force selection of aircraft and ordnance, and initial aircrew briefing. The strike pilots are briefed on the final details of the plan after direct radio contact is established and before they are committed to the first attack.

a. Target Selection.

CAS primarily *provides destructive or neutralizing fire as opposed to suppressive fire* by concentrating great amounts of firepower on small targets within a short

period of time. Effective results can be obtained by isolating critical elements within the area target and attacking them as point targets. However, the introduction of cluster munitions into the air-delivered arsenal makes possible the effective attack of larger area targets. The short timespan during which the destructive power is formed contributes to shock effect. Both destructive and shock effects can be exploited by the maneuver force.

CAS can suppress or neutralize as well as destroy, and can often inhibit enemy movement by its presence alone.

b. Major Factors Affecting Target Suitability.

(1) *Capabilities of Organic Weapons.* Organic and supporting weapons are considered before requesting CAS. This does not mean that organic fires should always be used before CAS is requested. However, the principle of using the lowest echelon means of fire support must always be applied.

(2) *Target Identification From the Air.* CAS users must insure that the pilot can identify the target. If possible, the maneuver or fire support unit should pinpoint it for him using marking rounds or precise grid coordinates.

(3) *Aircraft Armament Capabilities.* Insure that aircraft armament achieves the desired results. This is particularly important when diversion of strike flights already airborne is considered.

(4) *Fleeting Nature of Some Targets.* CAS is not called for unless the target will remain a target long enough to be struck by air.

(5) *Using a FAC to Control the Strike.* If the FAC is on the ground, he may encounter difficulty in directing deep airstrikes because of visibility limitations. If he is airborne, he may have trouble with air defense fires. If no FAC is available, the FIST chief/senior FS sergeant may control the strike.

(6) *CAS Density.* There is seldom enough CAS available to strike all suitable targets. Commanders and FSCoord's must

judiciously prioritize CAS requests.

(7) *Proximity of Friendly Forces to the Target.* Some types of ordnance cannot be used as close to friendly ground forces as others. For example, general purpose bomb effects are more predictable than those of a CBU.

(8) *Intensity of Antiaircraft Defense.* In general, a high air defense intensity level will dictate greater slant range for weapons release and increased need for suppressing enemy air defense (SEAD). This dictates ordnance suitable for delivery at higher dive angles and longer ranges from the target.

(9) *Weather.* The optimum ordnance for a particular target may not be deliverable under a low ceiling.

c. Strike Execution.

To accomplish an airstrike, aircrews must have as a minimum:

- ☐ positive identification of the target,
- ☐ positive identification of friendly positions, and
- ☐ clearance to expend ordnance.

(1) *Target Identification.* As a general rule, if the strike pilot can see the target, he can hit it. The target must be identified as accurately as possible. The supported ground unit must communicate the target location to the forward air controller (FAC), who communicates it to the strike flight. An airborne FAC can mark the target with smoke rockets or grenades, or call for a mark from the ground unit. In the absence of an airborne FAC, a mark from the ground usually will be necessary. Ground reference marks may include geographical features, smoke rounds from artillery or mortars, ordnance already impacting in the target area, illumination rounds for night strikes, tracer fire, and other ground fires near the target.

(2) *Friendly Position Identification.* The location of the unit nearest to the target is most important, but other units likely to be overflown in the attack pattern also should be considered. For tactical security it is best to

identify friendly positions by radio transmissions between the pilot and the FAC or FIST chief. Friendly positions may be marked by smoke grenades, flares, fires, signal mirrors, panels, balloons, strobe lights, vehicle lights, and radar beacons. These procedures are dangerous in that they provide the same information to both the enemy and the pilot.

(3) *Impact Adjustment.* In the absence of a FAC, ground personnel, usually the FIST chief, direct strike flights on target.

d. Corrections.

Corrections to the target must be simple, clearly understood, and fast. Cardinal directions are preferred over clock reference or attack heading corrections. The observer-target method of correcting artillery or mortar fires could be dangerously confusing in a fastmoving airstrike. For example, a forward air controller may tell a pilot to place the next bursts 300 meters north of the previous rounds rather than "Right 300." Fighters should not strike between a target mark and friendly positions unless those positions are clearly visible to the strike pilots and the munitions safe separation distance is not a factor.

Section VI. FSCoord AND FSE RESPONSIBILITIES WITH CAS

The FSCoord at each echelon is responsible to review all requests for fire support from subordinate units; evaluate CAS requests in light of other requirements; and make decisions within delegated authority to furnish requested support, substitute other types of support, or disapprove the request. When considering CAS requests, as one portion of total fire support, the FSCoord works closely with the S3/G3 air and ALO at each level. In this capacity he has the following responsibilities:

a. Provides planning information on CAS to the assistant G3 for CAS for development of allocation recommendations.

b. Reviews allocation of CAS resources and recommends suballocation.

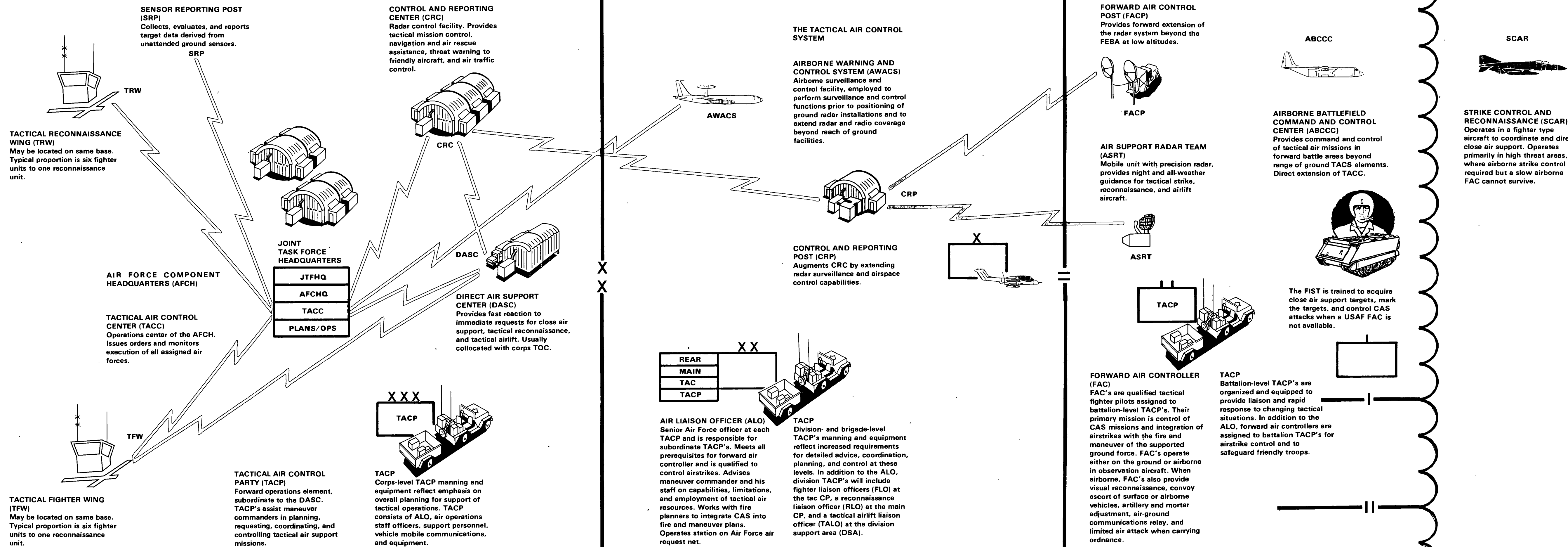
c. Monitors execution of all fire support missions to determine adequacy of mission accomplishment and coordinates post-strike damage assessment with TACP and the G2.

d. Coordinates with the airspace management element, the tactical air control

party, and the assistant G3 for CAS on fire support requirements for use of airspace and keeps all elements informed on status of planned special ammunition fires.

e. Recommends targets for attack by air-delivered special ammunition fires and recommends air interdiction targets.

Note. For a more thorough discussion of the integration of CAS into the overall fire support plan, refer to appendix I.



Appendix E Naval Gunfire Support

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Appendix E

Naval Gunfire Support

Section I. MISSION AND CHARACTERISTICS OF NAVAL GUNFIRE SUPPORT

E-1. General

Naval gunfire (NGF) can provide large volumes of immediately available, responsive fire support to combat forces operating in close proximity to coastal waters. These fires may be in support of amphibious operations or normal land operations conducted within range of naval firepower. The following discussion will address only fires in support of land operations.

WHY

- To perform his duties, the FSCOORD must be familiar with all aspects of supporting fires, to include naval gunfire.

WHAT

- This appendix describes the
 - mission,
 - purpose,
 - capabilities/limitations,
 - type ships,
 - weapons/ammunition,
 - organization for support, and
 - ammunition request channels of naval gunfire.

E-2. General Mission of Naval Gunfire Support

The general mission of naval gunfire support, in conjunction with other supporting arms, is to assist the maneuver force by destroying, neutralizing, or suppressing targets that oppose that force.

E-3. Characteristics of Naval Gunfire

An understanding of the capabilities and limitations of the naval gun facilitates its use in the ground support role. In considering the characteristics of naval gunfire, it is important to remember that the naval gun was designed for ship-to-ship combat.

a. Capabilities.

Mobility. Within the limits imposed by hydrographic conditions, the naval gunfire ship must be positioned for the best support of the ground force. The ability of the ship to maneuver is an important factor in planning for the support of separated forces and allows the selection of the most favorable gun-target line.

Fire Control Equipment. Precision fire control equipment permits accurate fires, both direct and indirect, to be delivered in support of ground forces while the ship is underway or at anchor.

Weapons Variety. The variety of weapons available permits selection of the caliber best suited to accomplish the mission. Aboard ship there is usually a minimum of two calibers of naval guns. Depending on the size and purpose of the vessel, a ship may have 3-inch, 5-inch, 6-inch, 8-inch, or 16-inch guns. Presently, there are no 16-inch guns on ships in the active fleet and the 3-inch gun, which is not classified as a shore bombardment weapon, is seldom used in support of ground forces.

Ammunition Variety. The variety of projectiles, powder charges, and fuzes permits selection of optimum combinations for the attack of targets. Fuzes, for example, can be set to provide for air, surface, or subsurface detonation of rounds.

Muzzle Velocity. The high initial muzzle velocity and relatively flat trajectory make the naval gun suitable for direct fire or assault fire, particularly against materiel targets that require penetration or destruction and that present a vertical face.

Rates of Fire. The large volume of fire that can be delivered in a relatively short period of time is a distinct advantage in delivering neutralization fires. For example, the new rapid fire 8-inch gun, mounted on the Salem class heavy cruisers, has a maximum rate of fire of 10 rounds per minute per gun, as compared with the maximum rate of fire of 1.5 rounds per minute of both the 8-inch howitzer and the 175-mm gun.

Deflection Pattern. The normal dispersion pattern is narrow in deflection and long in range. Very close supporting fire can be delivered when the gun-target line is parallel to the frontlines. This pattern also permits effective coverage of such targets as roads and runways when the gun-target line is parallel to the long axis of the target.

b. Limitations.

Flat Trajectory. The relatively flat trajectory results in a large range probable error. Therefore, the dispersion pattern of the naval gun is roughly elliptical, with the long axis in the direction of fire. This imposes a limitation on the ship in firing close to friendly troops because the ship must seek a gun-target line parallel to the friendly lines.

Hydrography. The hydrography conditions of the sea area in which the naval gunfire ship must operate may be unfavorable and may cause undesirable firing positions or require firing at longer ranges.

Fixing of Ship Position. The accuracy of naval gunfire depends upon the accuracy with which the position of the firing ship has been fixed. Navigational aids, prominent terrain features, or radar beacons emplaced on the shore may be used to compensate for this limitation.

Weather and Visibility. Bad weather and poor visibility make it difficult to determine the position of the ship by visual means and reduce the observer's opportunities for locating targets and adjusting fires. Bad weather also might force the ship out to sea. If the sea is extremely rough, the computers will be unable to keep up with the pitching and rolling of the ship. This will cause the computers to give improper data to the guns and the result will be inaccurate and potentially unsafe fires.

Changing Gun-Target Line. When the ship is firing while underway, the line of fire in relation to the frontlines may change. Under certain conditions, this can cause cancellation of the fire mission because the inherent large range probable errors may cause rounds to endanger friendly forces.

Magazine Capacity. The magazine capacity of fire support ships is limited. Although a relatively high percentage of the total ammunition is made available for gunfire support, some ammunition must be retained to protect ships from enemy air or surface attack. This limitation can be alleviated by rotation of gunfire support ships and other ships of the task force or by

resupply at sea.

Communications. The sole means of communication between the ship and shore is radio. Radio communication is susceptible to interruption resulting from equipment limitations, enemy electronic warfare, and unfavorable atmospheric conditions.

Enemy Action. If the naval gunfire ship comes under enemy surface, subsurface, or air attack, the ship will cancel its fire mission with the ground forces and attempt to counter this threat.

Section II. NAVAL GUNFIRE SUPPORT SHIPS

E-4. General

a. A general knowledge of ships' characteristics, to include size, armament, magazine capacities, and fire control systems, is necessary for naval gunfire planning. The size and physical dimensions of a ship affect its ability to maneuver and its ammunition capacity. The proportion of the ship's armament usable for fire support operations is a significant factor. The nature of the ship's fire control system determines the number of indirect fire missions that can be conducted simultaneously.

b. This section includes selected characteristics of several classes of ships that can provide naval gunfire support. Characteristics of individual ships within a class sometimes vary considerably. Therefore, when specific information about a ship's capabilities is required, it is best obtained through direct liaison with the ship or from NGF representatives attached to ground forces.

E-5. Gunfire Support Ships

a. Active Fleet.

There are three types of ships in the active fleet capable of providing fire support:

- guided missile cruisers,
- destroyers, and
- destroyer-type ships.

(1) *Guided Missile Cruisers.*

(a) There are two types of guided missile cruisers (CG) in the active fleet. The first and largest is a converted light cruiser on which the aft 6-inch turret has been replaced with a surface-to-air missile launcher. The forward 6-inch turret and the secondary armament 5-inch mount were left intact and can be employed in the gunfire support role. The missiles are not used in the gunfire support role. This ship can fire two indirect fire missions simultaneously, one with the main and one with the secondary armament. *This type of ship normally would be assigned the mission of general support to a brigade or larger unit.*

(b) The second type of CG has 5-inch guns as its main armament. It also has surface-to-air missiles. *It is normally assigned a mission of general support but may be assigned a mission of direct support.* A cruiser of this type is capable of firing one mission at a time. There are more than 20 in the active fleet.

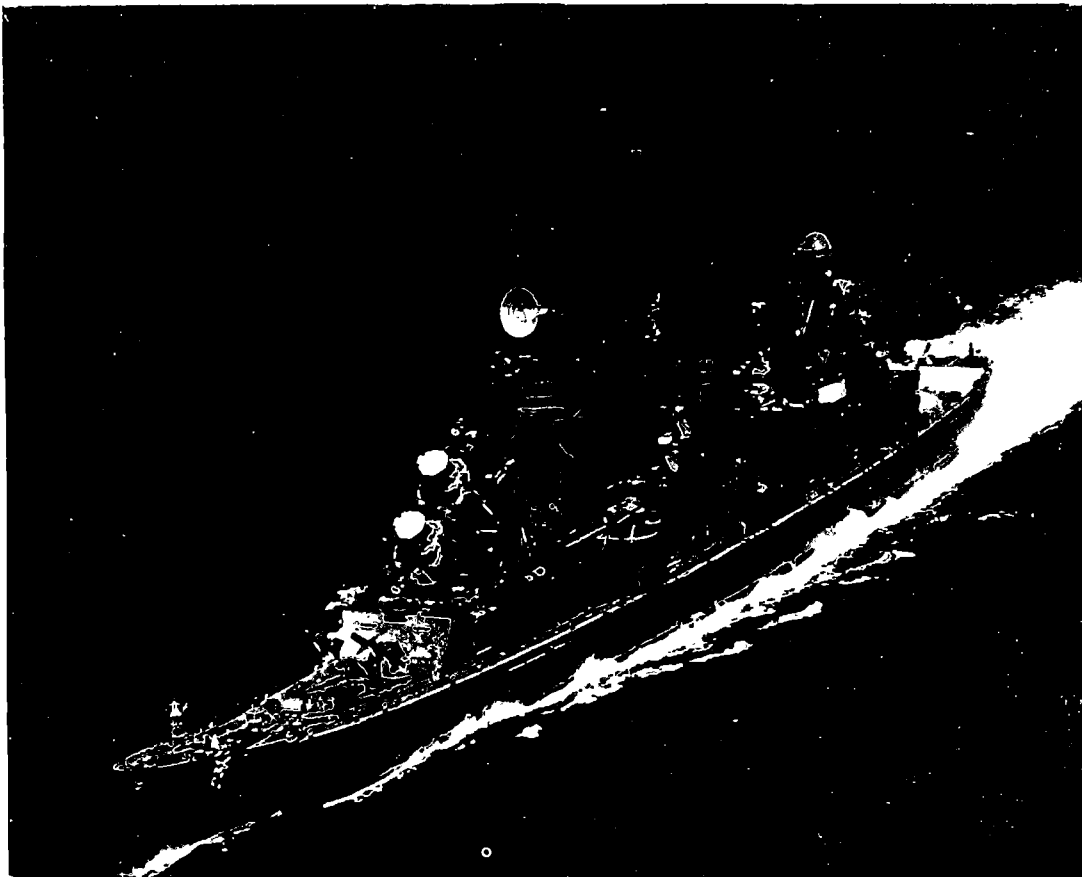
(2) *Destroyers.* The destroyer (DD) has 5-inch guns as its armament and *is normally assigned the mission of direct support of an infantry battalion.* A destroyer can fire one indirect fire mission at a time.

(3) *Destroyer-Type Ships.* In addition to the DD, there are several other destroyer-type ships. These include frigates (FF) and guided missile destroyers (DDG). Although NGF support capabilities will vary by ship type, any destroyer-type ship assigned an NGF support mission will have as a minimum a 5-inch gun.

b. Inactive Fleet.

The inactive, or reserve, fleet has several classes of ships capable of providing naval gunfire support. These ships are in varying stages of readiness and can be refitted for combat faster and less expensively than a new ship can be built.

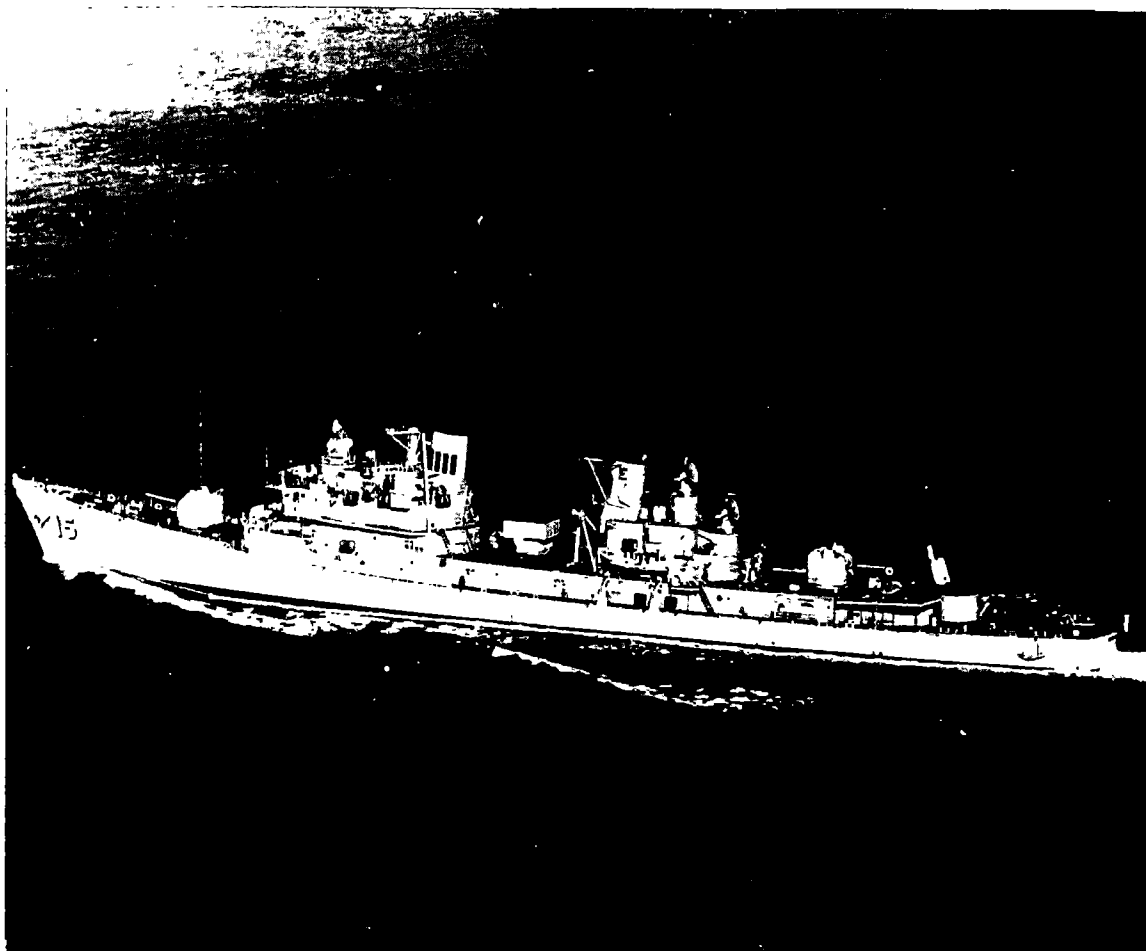
(1) *Battleship.* The *most powerful gunfire support ship is the battleship (BB).* It



↑ Guided Missile Cruiser (CG)

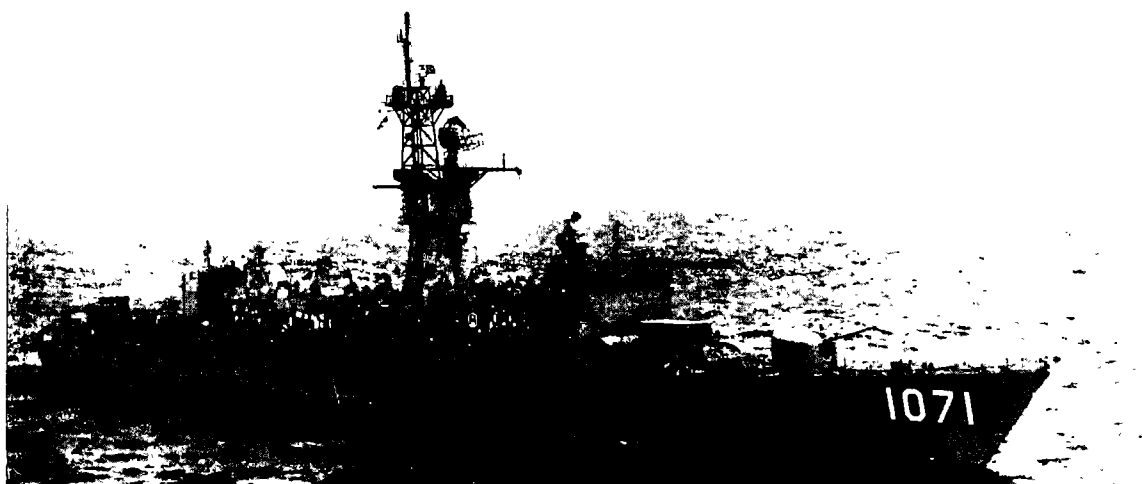
Destroyer (DD) ↓

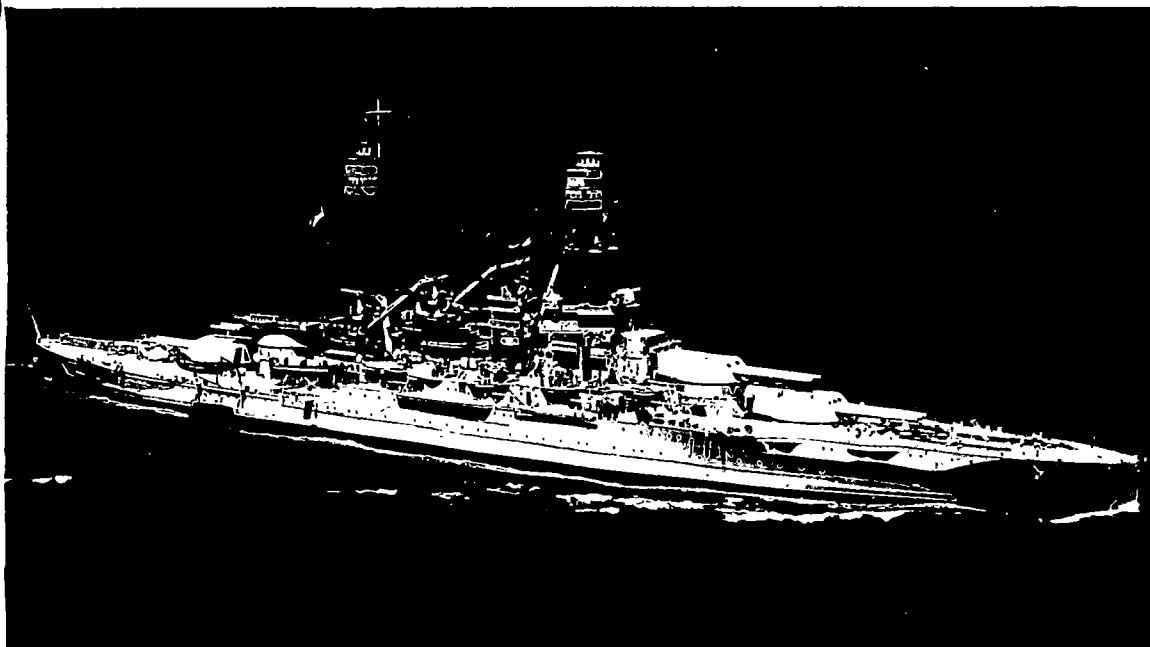




↑ Guided Missile Destroyer (DDG)

Frigate (FF) ↓





↑ Battleship (BB)

Rocket Support Ship (LFR) ↓



is particularly well suited for shore bombardment because of the long range (29,200 meters maximum effective range) and destructive impact of the main battery 16-inch guns. These ships also have secondary batteries of 5-inch guns that can be employed in fire support. The ammunition capacity and the versatility of the fire control system make this ship particularly well suited for ground force support. The BB is *normally assigned the mission of general support to a division.*

(2) *Heavy Cruiser.* Heavy cruisers (CA) are well suited for gunfire support roles with their main batteries of 8-inch guns. The maximum effective range of the main battery is approximately 26,000 meters. The secondary battery of 5-inch guns also provides a considerable amount of fire support. The heavy cruiser has dual fire control systems and an adequate ammunition capacity. Most heavy cruisers have the capability of carrying their own helicopters for spotting. *These ships usually are assigned the mission of general support of brigades and higher echelons.*

(3) *Guided Missile Heavy Cruiser.* Guided missile heavy cruisers (CLG) are modified heavy cruisers, but they still possess a considerable fire support capability. The aft 8-inch turret has been replaced with surface-to-air missile launchers, and one 5-inch mount has been removed. *These ships are usually assigned missions of general support of brigades and higher echelons.*

(4) *Rocket Support Ships.* Inshore fire support ships (LFR) are rocket support ships designed primarily for shore bombardment. They are capable of intensive beach neutralization. *These ships are usually placed in general support of a brigade or higher echelon.* The LFR has a main battery of eight rocket launchers and a 5-inch/38 caliber single-mount gun. Depending on the type of rocket, the maximum effective range is approximately 9,100 meters.

Section III. AIR/NAVAL GUNFIRE LIAISON COMPANY

E-6. Mission

The air and naval gunfire liaison company (ANGLICO), Fleet Marine Force, is a unit specifically designed for support of US Army or allied divisions. It provides control and liaison agencies associated with the ground elements of a maneuver force in the control and employment of naval gunfire and Navy/Marine close air support. It does not provide tactical air direction centers or direct air support centers, and it is designed to operate only at division level and below. The mission of the ANGLICO includes the provision of support to airborne units by parachute-qualified personnel. Task-organized control and liaison teams and parties are further assigned to division, brigade, and battalion echelons to advise on the capabilities, limitations, and employment of naval gunfire and/or naval air support and to provide the necessary personnel and communications required at the various echelons to request, direct, and control the support.

E-7. Organization

The company is organized into three groupings (fig E-1):

a. Company Headquarters.

This headquarters furnishes command, coordination, and administration and logistic support for the company.

b. Division Air and Naval Gunfire Platoon.

This platoon provides personnel for coordination efforts at the division level.

c. Three Brigade Air and Naval Gunfire Platoons.

These platoons provide personnel and communication facilities for the control and employment of naval air and gunfire at the brigade and battalion echelons.

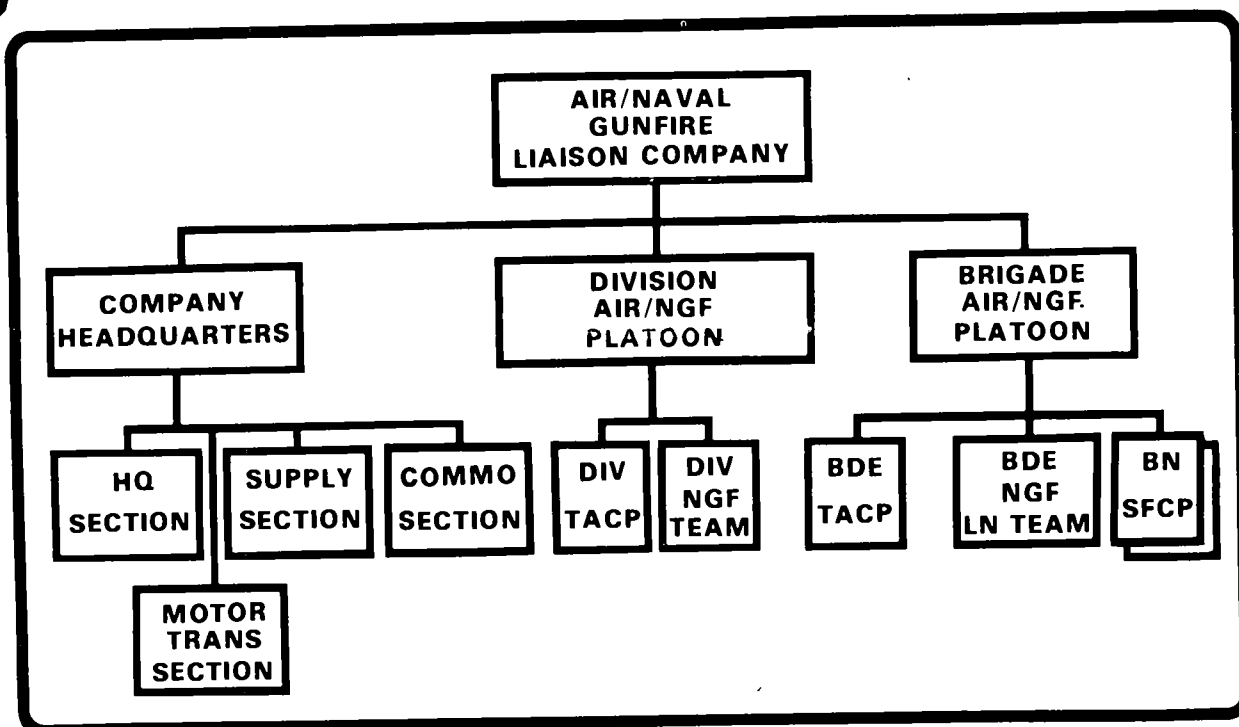


Figure E-1. Organization of ANGLICO.

(1) *Division Level.* At the division level the ANGLICO will provide a Marine lieutenant colonel, who will function as the NGF liaison officer in the division fire support element (FSE). His main functions are to advise the commander and his staff and to coordinate the employment of NGF support.

(2) *Brigade Level.* A naval gunfire liaison officer is also provided to each of the brigade headquarters. This officer will be placed in the fire support element and will advise the commander and his staff on naval gunfire and will coordinate its employment in support of brigade operations.

(3) *Maneuver Battalion Level.* At the maneuver battalion level is a shore fire control party (SFCP) which consists of a naval gunfire liaison team and a naval gunfire spot team. The liaison team will be located in the battalion fire support element and the naval gunfire spot team will normally be located with one of the companies. The spotter's primary function is

to request and adjust naval gunfire similar to the manner in which the forward observer adjusts artillery. The liaison officer's duties are essentially the same as those already discussed for the NGF officer at the division and brigade levels.

Section IV. EMPLOYMENT CONSIDERATIONS

E-8. Tactical Missions of Naval Gunfire Support

Naval gunfire ships are assigned one of two missions—direct support or general support—in much the same way that field artillery is organized for combat. Relationships between assigned ships and supported ground force units are on a basis of limited, delegated responsibility; e.g., ships placed in support provide the requested fire within their capability, but ship positioning

and method of delivery are left to the discretion of the ships' captains. The supported ground force unit selects the targets, the timing of fires on the target, and the adjustment of fires.

a. Direct Support

A ship in direct support of a specific troop unit (normally a battalion) delivers both planned and call fires. Call fires are to the ship what targets of opportunity are to artillery units. A shore fire control party, consisting of a naval gunfire liaison team and a naval gunfire spot team with the supported unit, conducts and adjusts call fires. Call fires may also be adjusted by a naval gunfire air spotter. Although members of the SFCP are specially trained in the conduct of naval gunfire, the procedures are simplified and standardized so that *any trained supporting arms observer* can effectively adjust the fire of a ship.

A direct support ship will respond to calls for fire from units other than the supported unit when ordered to do so by the fire support group commander, the division naval gunfire officer, or the brigade naval gunfire liaison officer.

There are not seven inherent responsibilities as in the artillery direct support mission, but there are definite responsibilities.

b. General Support

General support missions are assigned to ships supporting units of brigade size or larger. The normal procedure is to have the fires of the general support ship adjusted by an air observer or for the liaison officer to assign the fires of the ship to a battalion SFCP for fire missions. In the latter case, on completion of the mission, the ship reverts to general support. Prearranged fires are delivered in accordance with a schedule of fires.

E-9. Coordination and Control Measures

Many of the measures used to coordinate the fires of the naval gunfire support ships

are identical to those used by the fire support coordinator for the field artillery and tactical air. Boundaries, coordinated fire lines, fire support coordination lines, and restricted fire lines as used by naval gunfire support ships convey the same meaning to the Navy as they do to Army units, thus allowing rapid fire support coordination.

a. Zones of Fire

The land within the Army objective area (zone of action) is divided into zones of fire (ZF). These zones are assigned to gunfire support ships to coordinate the efforts of each ship with the efforts of other ships and with the scheme of maneuver of the supported troop units. Fire support units or ships are assigned the tasks of destroying or neutralizing known enemy installations and of attacking targets of opportunity within their zones in accordance with the assigned gunfire support mission. The size and shape of the zone may depend on the following factors:

Boundaries. The boundaries of the zones of fire normally correspond to the boundaries of the supported troop units. This simplifies the problem of coordinating gunfire support with the action of the supported unit.

Availability of Targets. The size of each zone will be such that the fire support ship(s) assigned to observe and/or destroy targets will be able to accomplish its mission within the time planned. When the zones of fire are delineated, the known or suspected targets scheduled for destruction in each zone are plotted and the number and types of targets are compared with the capability of the ship to conduct the missions.

Visibility. Observation into the zone of fire from seaward is a desirable feature since it permits a ship to rapidly engage a target and to track it if the target is moving. (Figure E-2 shows ZF overlay.)

b. Fire Support Areas and Fire Support Stations

Closely related to the assignment of gunfire support missions is the assignment of sea areas in which the ships are to operate.

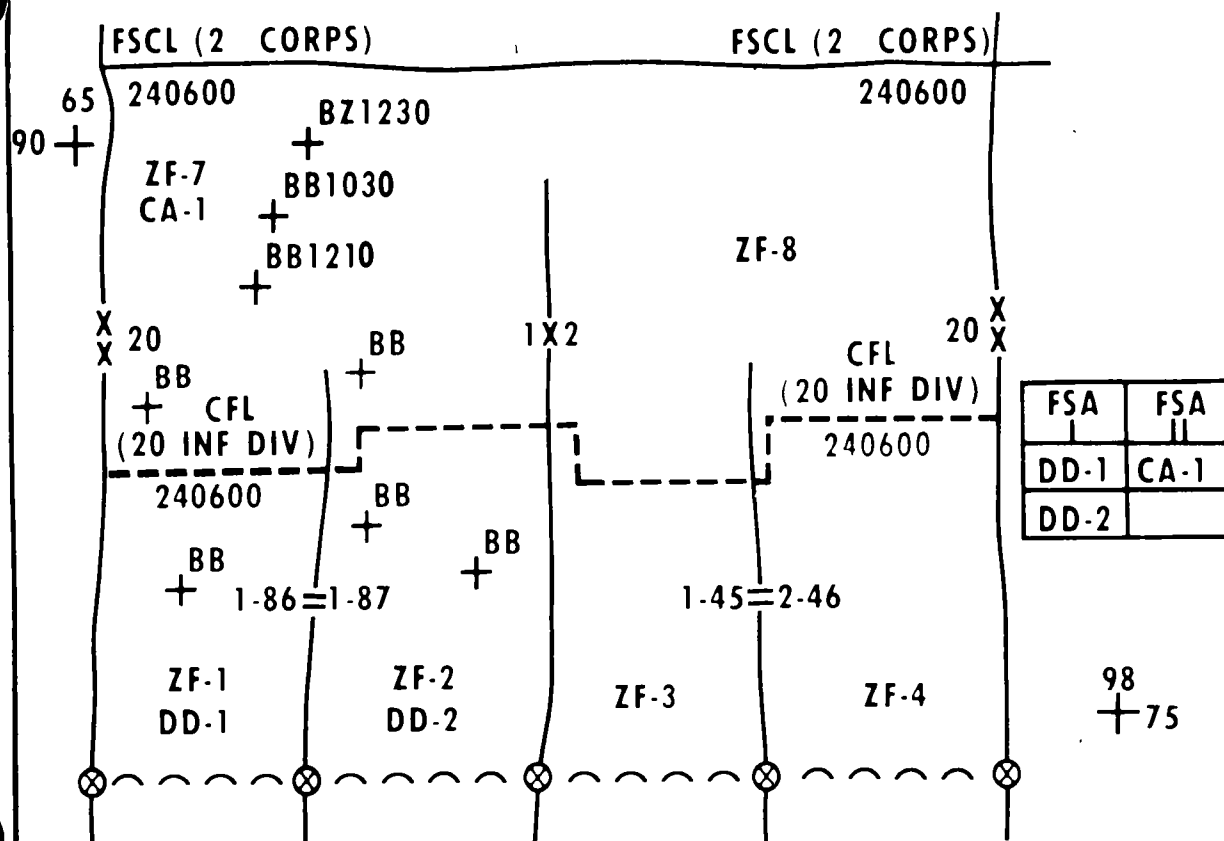


Figure E-2. Zones of fire target overlay.

These areas are called fire support areas (FSA) (fig E-3). The areas are given numbers (roman numerals) or names and are shown on the naval gunfire overlay in the NGF support plan. They are selected to provide space for the execution of the support mission

and for maneuver room to evade enemy fires. However, if sea space is restricted, it may prove advantageous to use fire support stations (FSS) (fig E-3) where the firing ships are placed and maintained in exact, predetermined locations.

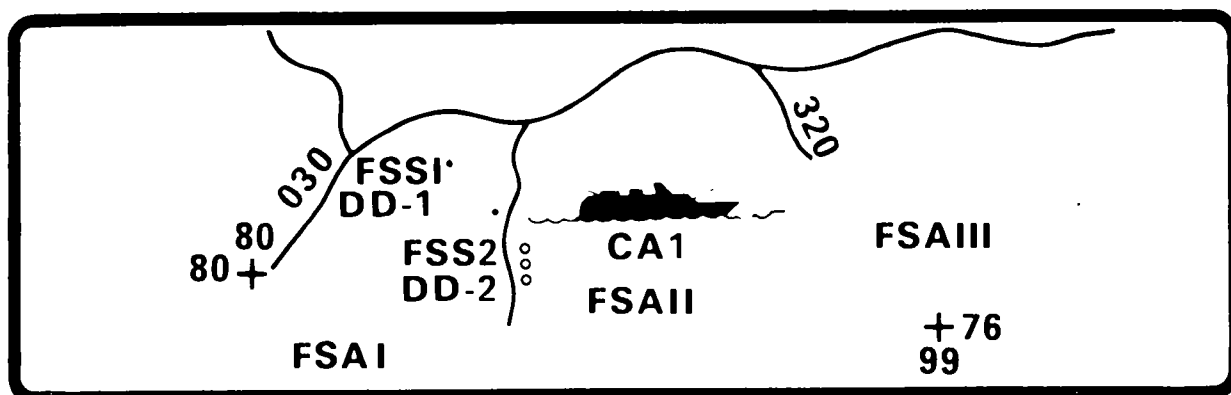


Figure E-3. Fire support areas and fire support stations.

(1) *Fire Support Areas.* A fire support area is a definite sea area assigned to a fire support unit or to an individual fire support ship in which to operate when executing fire missions. Fire support areas should be located in such a way as to minimize

interference with other ships operating in the same waters. They are selected considering hydrographic conditions, minefields, and anti-aircraft and antisubmarine disposition to provide the best position with respect to range, line of fire, and observation.

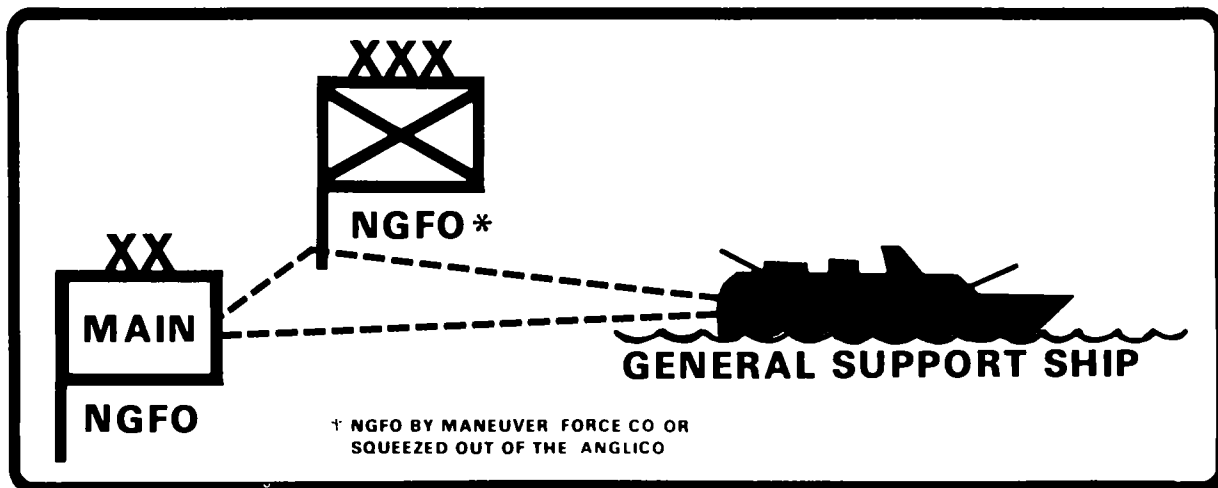


Figure E-4. Force naval gunfire support net.

(2) *Fire Support Stations.* A fire support station is a specific location in which a firing ship may be placed and maintained while providing fire support. It enables a ship to be stationed in areas in which maneuvering room is restricted. The assignment of a fire support station to a support ship greatly reduces its mobility.

E-10. Naval Gunfire Communications

Radio provides the primary means of communication for naval gunfire support. Several nets are normally established to control and coordinate this support.

a. Force Naval Gunfire Support Net

The force naval gunfire support net (HF: V/CW) (fig E-4) is established when the supported force consists of two or more divisions. The station of the force naval gunfire officer is the net control station, and the division naval gunfire officers and the

fire support ships in general support of the force guard the net. Brigade naval gunfire liaison officers (NGLO) enter this net in an emergency.

b. Division Naval Gunfire Support Net

The division naval gunfire support net (HF: V/CW) (fig E-5) provides communication between the division naval gunfire officer (net control), the brigade naval gunfire liaison officers, and the ships in general support of these units. No naval gunfire radio net is established between the brigade naval gunfire liaison officers and the shore fire control parties at the infantry battalions. Communications between battalion and brigade are primarily by radio and wire over the maneuver communications system or the communications systems of other supporting arms representatives.

c. Naval Gunfire Ground Spot Net

The naval gunfire ground spot net (HF/VHF: V) (fig E-6) provides a circuit for

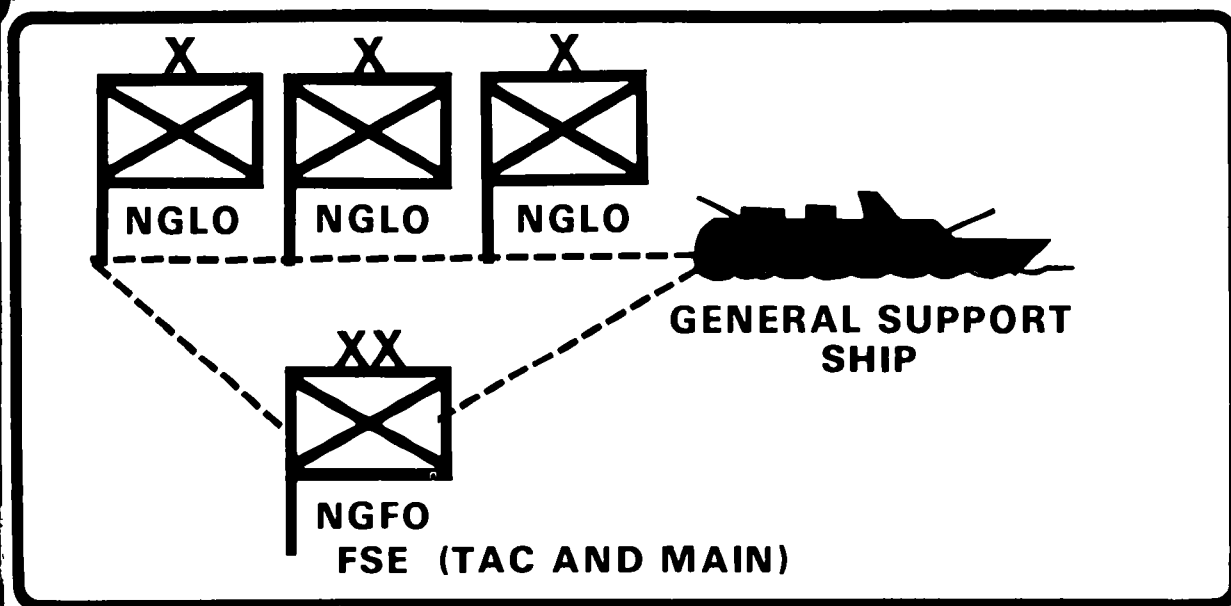


Figure E-5. Division naval gunfire support net.

requesting and adjusting naval gunfire. Included in the net are the naval gunfire spot team, the naval gunfire liaison team (battalion), and the direct support ship. The spotter sends his mission directly to the direct support ship with the naval gunfire liaison officer at the maneuver battalion FSE

monitoring the mission. This enables the FSE to stop the mission, if necessary for reasons of safety or other appropriate reasons (poor choice of weapon system, duplication of effort, etc.). If there is no reason to stop or delay the mission, it is approved by the FSE remaining silent.

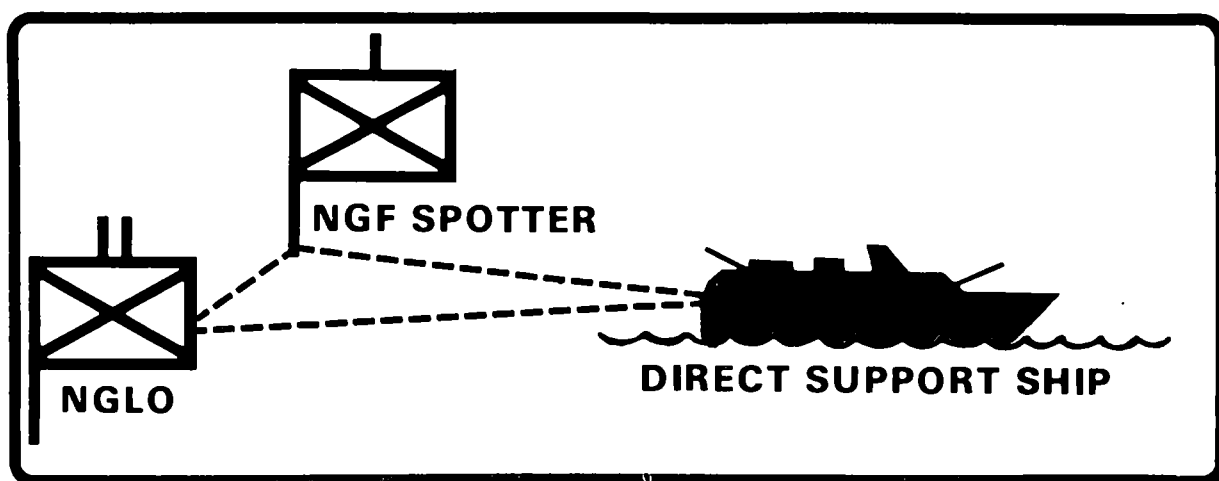


Figure E-6. Battalion naval gunfire ground spot net.

(1) If additional naval gunfire support is required, or a larger caliber of weapon (e.g., for destruction missions) is required for a particular mission, the battalion NGLO submits a request for such additional fire to the NGLO at the brigade FSE. If such a request is approved, it is assigned to a ship in general support of the brigade. The general support ship will either be directed to enter the appropriate shore fire control party (SFCP) ground spot net, or an airborne naval gunfire spotter will be assigned to facilitate control and adjustment of the mission.

(2) If an airborne spotter is used, the SFCP's spotter will have communications

with him and can assist him in locating the target and friendly frontlines.

d. Naval Gunfire Air Spot Net

The naval gunfire air spot net (VHF/UHF: V) (fig E-7) provides communications for an airborne spotter to adjust naval gunfire. Included in this net are the direct and general support ships, the airborne spotter, and the shore fire control party (NGLO). The appropriate landing force naval gunfire spot team and the naval gunfire liaison team monitor this net when the general support ships are being fired by the air operator.

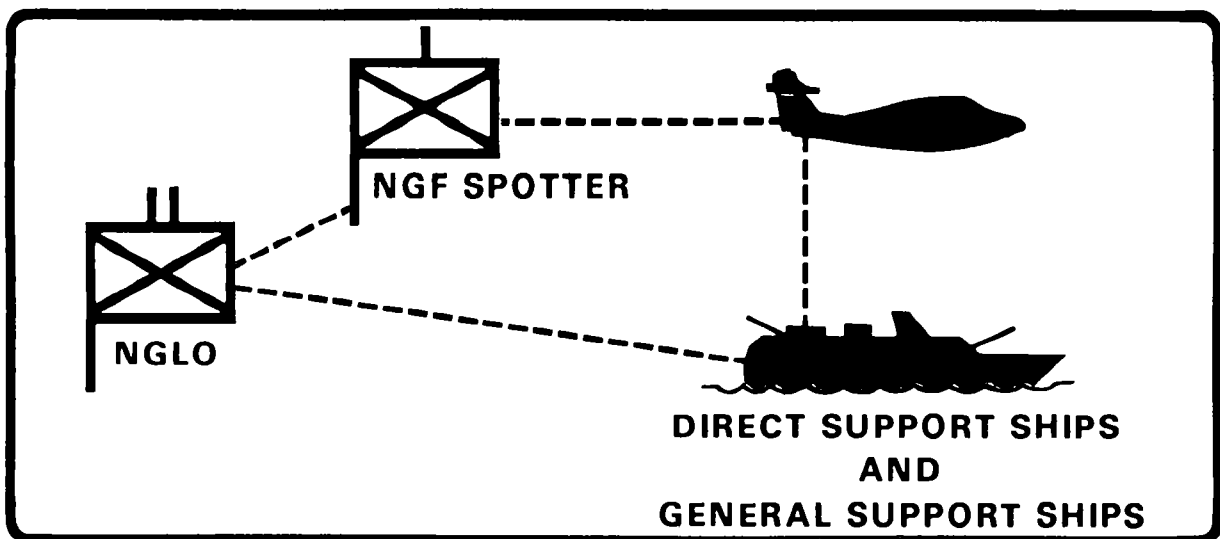


Figure E-7. Naval gunfire air spot net.

TAB A TO APPENDIX E: NAVAL GUNFIRE WEAPONS

*WEAPON	MAXIMUM RANGE (meters)	MAXIMUM EFFECTIVE RANGE (meters)	ROUNDS PER MINUTE		AMMUNITION AVAILABLE
			MAXIMUM	SUSTAINED	
8-in/55	29,800	26,000	4 (10)**	3 (10)**	AP, HC, AAC
6-in/47	23,000	21,000	10	10	AP, HC, AAC
5-in/54	25,900	22,500	20	20	COM, HC, ILLUM, AAC, WP
5-in/38	18,000	15,000	20	15	COM, HC, ILLUM, AAC, WP

*The caliber of the weapon is indicated by two figures. The first figure represents the diameter of the bore; the second figure represents the length of the tube in calibers. Therefore the tube of a 5-in/54 gun has a diameter of 5 inches and a length of 270 inches ($5 \times 54 = 270$).

**The higher figure is the rate for ships with completely automated systems.



TAB B TO APPENDIX E: AMMUNITION

Capacities*

SHIP	WEAPON	NUMBER OF ROUNDS	WEAPON	NUMBER OF ROUNDS
Heavy cruiser (CAG)	8-in/55	1,350	5-in/38	15,700
Light cruiser (CG)	6-in/47	1,400	5-in/38	1,600
Destroyer (DD)	5-in/54	1,700	5-in/38	12,100

*Some ammunition will be reserved for self-defense. Therefore, the FSO must determine how many rounds are available for fire support

Projectiles**

NAVAL SHELL TYPE	FIELD ARTILLERY EQUIVALENT	CALIBER	FUZE	REMARKS
AP (armor piercing)	HEAT	6-in/47	Delay, base detonating.	Suitable for attacking hard targets; e.g., concrete pillboxes, fortifications. Destruction missions. In the call for fire, use ARMOR PIERCING.
		8-in/55		
COM (common)	HEAT	5-in/38 5-in/54	Base detonating.	Same as armor piercing.
HC (high capacity)	HE	5-in/38	Steel nose plug, auxiliary fuze & non-delay base detonating or point detonating; time; variable time.	Personnel targets, medium and soft targets, area neutralization. 6-in/47 and 8-in/55 can be used in destruction missions. Close support for ground troops. In the call for fire, use HE.
		5-in/54		
		6-in/47		
		8-in/55		
ACC (antiaircraft)	HE	5-in/38	Base detonating, time (nose), point detonating (all with auxiliary fuze).	Light destruction. Area neutralization. Close support of troops. In the call for fire, use HE.
		5-in/54		
WP (white phosphorus)	WP	5-in/38	Time, point detonating.	Screening and burning (on-board quantities limited). In the call for fire, use SMOKE.
		5-in/54		
ILLUM (star shell)	ILLUM	5-in/38 5-in/54	Time	Battlefield illumination; good to fair light over 350-550 meter diameter; burn time of 45 to 52 seconds; at less than 6500 meters, projectile will have high rate of duds (ripped chutes). In the call for fire, use ILLUMINATING.

** Full service charges are designed for use with AP, COM, or HC projectiles to produce the maximum muzzle velocities required for either maximum penetration or extreme range.

** Reduced charges are designed to reduce gun erosion, which prolongs the life of the tube, and to achieve a higher angle of fall. In the call for fire, use REDUCED CHARGE

Fuzes

NAVAL FUZE TYPE	FIELD ARTILLERY EQUIVALENT	PROJECTILES	REMARKS
BD (base detonating)	BD	AP, COM, HC	A steel nose plug is used with a base-detonating fuze. In the call for fire, use FUZE DELAY.
PD (point detonating)	PD	HC, WP	These fuzes have ON and OFF settings which permit the use of fuze delay if set on the OFF position. In the call for fire, use FUZE QUICK.
MTSQ (mechanical time)	MTSQ	HC, ILLUM, WP	This fuze may be set on SAFE or from 6 to 45 seconds. A steel nose plug is provided for use in lieu of MTSQ fuze when the delay feature of a base fuze in the HC projectile is desired. In the call for fire, use FUZE TIME.
VT (proximity)	VT	HC	This fuze arms 500 to 1,500 meters from the muzzle. It will function when it is within 50 to 100 feet of a reflecting surface and must clear intervening land masses by 500 feet to prevent possible premature detonation before it reaches the vicinity of the target. In the call for fire, use FUZE VT.
VT	VT	HC	The characteristics of the fuze are the same as those of the proximity fuze. A time setting from 5 to 100 seconds may be set on the fuze. The time element is armed 2 seconds after firing or from 3 to 5.5 seconds prior to the time set on the fuze, whichever is later. In the call for fire, use FUZE VT.

Appendix F Other Fire Support Means

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F-2	Attack Helicopters (AH)
F-3	Air Defense (AD) Weapons
F-4	Tanks
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Appendix F

Other Fire Support Means

F-1. General

In addition to field artillery, close air support, mortars, and naval gunfire, there are several other weapons systems that can provide fire support for the maneuver commander. Among these systems are attack helicopters, air defense systems, and tanks. These weapons are *not* primary fire support means and the commander must weigh carefully his need for added fire support against the loss of these weapons in their primary role. The following paragraphs discuss the use of these systems and describe some of their capabilities.

WHY

- The FSCoord must be aware of all systems capable of providing fire support for the force and know their capabilities and limitations.

WHAT

- This appendix discusses the fire support capabilities and limitations of:
 - attack helicopters;
 - air defense weapons;
 - tanks.

F-2. Attack Helicopters

a. The attack helicopter (Cobra) is a tank killer and is found in all Army divisions. Although it is primarily a maneuver weapon, the attack helicopter is capable of mounting an impressive array of weapons, and can be used as a fire support means in a manner similar to CAS. Figure F-1 shows the weapons options and ammunition carrying capabilities of the Cobra.

Munition/Wpn System	Rate of Fire	No. of Rounds Carried on Board
2.75-in rockets (10-lb warhead)	Fire by pairs or Salvo	76* (in 4 pods)
2.75-in rockets (17-lb warhead)	Fire by pairs or Salvo	62* (in 4 pods)
20-mm cannon	650-850 rds/min	1,000
40-mm grenade launcher	400	300
7.62-mm minigun (turret)	2,000 to 4,000	4,000
7.62-mm minigun (POD)	2,000 to 4,000**	1,500
TOW missile	N/A	8

* The rockets may be fuzed with fuze delay, fuze super quick, or fuze proximity.

** Rate of fire must be set prior to takeoff.

Figure F-1. Helicopter weapons/ammunition.

b. Not all of the weapons shown in figure F-1 can be carried simultaneously on one helicopter. Additionally, the ammunition loads listed represent maximum figures for each type of ordnance. If two or more types of ammunition are desired, tradeoffs will have to be made and less of each type of ammunition carried. When employment of attack helicopters is anticipated, the types of targets to be engaged must be specified so that the proper ordnance will be loaded in the aircraft.

c. With their 2.75-inch rockets, helicopters are capable of both direct and indirect fire. However, in the indirect fire mode direction is controlled by the onboard compass, which does not provide sufficient accuracy for precision gunnery. Therefore, attack helicopters achieve their greatest effectiveness when employed in direct fire by fire team (platoon, company) against soft area targets. *The TOW-mounted Cobra, however, is an excellent antitank weapon.* Cobras can also be used to suppress other surface targets and to provide protection for airlift helicopters.

d. When attack helicopters are employed against targets in enemy territory, FA fires are planned along the air corridor to suppress enemy ground fire (including suppressing enemy air defense (SEAD)). This planned fire is particularly important during the withdrawal phase of an operation since, with their ammunition expended, the aircraft are virtually defenseless. This asset should not be used to attack targets that can be engaged more effectively by other fire support means. The requirement to provide field artillery suppression along air corridors may work as a limiting factor in the use of attack helicopters. A situation may arise where such a large expenditure of ammunition is needed to protect the helicopters, that they are no longer a viable, cost-effective means to attack the target.

e. Helicopter operations are limited in periods of reduced visibility. The weather and light conditions, as well as the status of

enemy air defense, must be considered when making the decision to employ attack helicopter in a fire support role.

f. Further information on the employment of attack helicopters can be found in TC 1-40, *Attack Helicopter Gunnery*, FM 90-1, *Employment of Army Aviation Units (TBP)*, and FM 17-50, *Attack Helicopter (TBP)*; specifications on helicopter weapons systems are in TM 55-1520-221-10.

F-3. AD Weapons

Air defense (AD) artillery primarily provides defense against enemy air attack. However, two air defense weapons systems, the Vulcan 20-mm gun system and the Nike Hercules missile system, can be used to engage ground targets. The capabilities and limitations of each of these weapons are discussed below.

a. Vulcan.

The self-propelled Chaparral/Vulcan (CV) battalion has two Chaparral and two Vulcan batteries and is organic to the infantry, armored, and mechanized infantry divisions. The towed Vulcan battalion, consisting of four Vulcan batteries, is organic to the airborne and air assault divisions. Each Vulcan battery has 12 fire units.

(1) In the absence of an air threat, Vulcan can be used to provide direct and indirect ground fire support for maneuver units against such soft targets as troops in the open, wheeled vehicles, and lightly armored vehicles. It can also suppress enemy antitank and other crew-served weapons; and, although Vulcan cannot kill tanks, it can cause their crews to button up, making them more vulnerable to other (e.g., ATGM) fires.

(2) When loaded with ground support ammunition (HEI), Vulcan's direct fire range is 2,200 meters and its indirect fire range is 4,500 meters. The normal rate of fire in the ground support role is 1,000 rounds per minute. This high rate of fire produces a

limitation in that the self-propelled Vulcan carries only 1,800-2,000 rounds on board. Thus, if extended engagement is anticipated, reloading time (3-5 min) must be considered. FM 44-62 outlines Vulcan direct and indirect fire procedures.

b. Nike Hercules Missile.

Nike Hercules units are normally assigned to theater air defense organizations, protecting critical rear area installations. However, some Nike Hercules units may be positioned in the corps area of responsibility. A Nike Hercules battalion has four firing batteries, each with the ability to engage one target at a time.

(1) Nike Hercules batteries can deliver long-range (140 km) nuclear or conventional surface-to-surface fires. Its long range and delivery accuracy make the Nike Hercules an excellent weapon for attack of deep enemy air defense sites, airfields, and supply depots. The assignment of a surface-to-surface mission, however, precludes the Nike Hercules battery from performing its air defense mission for the duration of the surface-to-surface fire mission. Upon completion of the surface-to-surface mission, the battery automatically reverts to its air defense role.

(2) Special survey control is needed when the Nike Hercules is to be used in the surface-to-surface role. Although for normal air defense operations, the battery may locate itself by map inspection and aiming circle, for surface-to-surface missions the target tracking radar (TTR) requires more accurate control. Fifth order artillery survey (including altitude) and directional control to an accuracy of +0.3 mil is needed for the TTR in order to fire a surface-to-surface mission. Since the Nike Hercules battery has only an aiming circle for survey, this control must be provided by engineers or field artillery personnel. Additional information on Nike Hercules in the surface-to-surface role is contained in FM 44-82.

F-4. Tanks

The main battle tank, although it is the dominant maneuver weapon on the modern battlefield, can also be used to provide indirect fire support. The 105-mm main gun is capable of achieving a maximum range of 9,000 meters in the indirect mode. Tank ammunition is largely antiarmor oriented, but antipersonnel rounds are available. However, few fuzing options exist since all projectiles (except beehive) are base fuzed to detonate on impact.

a. All tanks are equipped with the M-13 quadrant, which provides 1-mil accuracy for elevations up to the 365-mil maximum onboard elevation capability. The M1A1 (artillery gunner's quadrant) is issued on the basis of one per tank company for more accurate settings. To accommodate this instrument, the main gun's breech is scribed with witness marks and provided with leveling surfaces.

b. A significant difficulty exists in considering the employment of tanks in the indirect fire role. To achieve elevations of over 365 mils (elevation limit of the main gun) the vehicle itself must be elevated. Thus, the tank must either be backed into a depression or run up on an embankment in order to achieve higher elevations. This maneuvering is time consuming and, by its nature, impedes mobility and makes the tanks vulnerable to ground or air attack.

Further discussion on the use of armor in the indirect fire role is found in FM 17-12 *Tank Gunnery* and FM 6-40 *Field Artillery Cannon Gunnery*.

F-5. Summary

a. For each of the weapons systems discussed above, fire support is a secondary mission. Since these systems represent a significant portion of the force's combat

power when performing in their primary roles, they should be used as fire support weapons only in extreme emergencies, and when the usual fire support systems are out of range or unable to engage.

b. The maneuver commander, on the advice of his FSCOORD, makes the decision to commit these maneuver assets to fire support. Both of these individuals must be aware of the tradeoffs dictated by such a decision. If, for example, it is decided to use either of the two air defense weapons systems for fire support, they will be *unable to perform their primary mission*. Thus, danger of air

attack must be weighed against the need to attack the ground target.

c. When the use of one of these weapons systems is found to be necessary, the FSCOORD includes its fires in his normal planning. He coordinates tasking, times on target, and target location information with the maneuver S3. The fire units themselves will provide their own technical fire control, or in the case of armor, they may be satellited on a field artillery unit for direction and survey.

d. Further information on the coordination of fires from these means of fire support is included in appendix I.



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Appendix G

Fire Support/Fire Direction Facilities, Resources and Duties

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Appendix G

Fire

Support /Fire Direction

Facilities, Resources,

and Duties

Fire support and fire direction facilities range from the FIST at company level to the field artillery section organic to HHC, corps. These facilities are the catalyst in making all fire support assets respond to the maneuver commander's needs. While operation of these facilities is the responsibility of the field artillery commander at each level, and the majority of the personnel and equipment come from FA units, their mission of executing total fire support warrants a discussion apart from the FA system.

Section I. FIRE SUPPORT FACILITIES

WHY

- ☐ The FSCoord must know about the fire support and fire direction facilities, their responsibilities, and their resources.

WHAT

- ☐ This appendix outlines:
 - the fire direction and fire support facilities that operate from company level to corps;
 - the resources of these facilities;
 - the duties of key people in these facilities.

G-1. Company/Troop

The FIST is the fire support organization at company/troop level. The organizations and equipment of the FIST for various company level units are shown in figure G-1. *Note to Reader:* Portions of TOE in this appendix are quite different from TOE for the same organizations published elsewhere. These differences reflect the personnel and equipment needed to get the job done and are the basis for recommended change to the TOE. For example, the new requirement to man a tactical and main FSE at division level simultaneously on a 24-hour basis generated a need for more personnel as reflected in figure G-5.

G-2. FIST Duties

- a. The FIST has five major duties:
 - ☐ Locate targets and request and adjust fire support.
 - ☐ Plan fires.
 - ☐ Coordinate fire support.
 - ☐ Report battlefield information.
 - ☐ Provide emergency control of CAS.
- b. The FIST chief serves as the FSCoord for the company/troop. In this

	Personnel					Equipment									
	(LT) FIST Chief	(E6) Fire Spt SGT	(E5) Forward Obs	(E4) Driver/RTO	(E3) RTO/FS Specialist	M151A2 (w/tlr)	M561	M113A1	AN/PVS-5 or -3	AN/TVS-5	AN/GRC-160	AN/PRC-77	AN/VRC-47	AN/GRA-39	KY-38
Tank Co (Less Lt Tank Co., Arm Bn, Abn Div; AC Trp, Sep Abn Bde)	1	1		1	2			1	1	1	2	1	1	2	1
Lt Tk Co (Abn Div) AC Trp (Sep Abn Bde)	1	1		1	2		1		1	1	2	1	1	2	1
Rifle Co (Mech)	1	1	3	1	3			1	1	1	2	3	1	2	1
Rifle Co, Inf Bn Inf Div Sep Inf Bde Sep Lt Inf Bde	1	1	3	1	3	2			1	1	2	3	1	2	1
Rifle Co, Abn Inf*	1	1	3	1	3		1		1	1	3	3		2	1
Rifle Co, AASLT Inf Div	1	1	3	1	3	1			1	1	1	4	1	2	1
*Personnel must be parachutists.															

*Personnel must be parachutists.

Figure G-1. FIST.

capacity he plans and coordinates all fire support for the unit to which he is assigned. This includes developing fire support plans, numbering targets, and advising the commander on all fire support matters. Additionally, the FIST chief supervises the activities of his team, which is responsible for processing all types of fire requests and adjusting fire. He also acts as liaison officer for the supporting FA unit(s), keeps

supporting FA units informed of changes in target priorities, and reports battlefield information. He occasionally will be called to cue target acquisition assets.

c. Figures I-29 through I-32 in appendix I depict the options and communications nets available to the FIST.

d. TC 6-2-10, *Fire Support Team (FIST)*, describes FIST operations in more detail.

G-3. Battalion/Task Force

The fire support section of the direct support FA battalion establishes a fire support element (FSE) to provide fire support planning and coordination at the maneuver battalion/task force level.

a. The organization and equipment for the various types of sections are shown in figure G-2.

b. The FSO at battalion/task force level is the FSCOORD and supervises the FIST s

supporting the unit. He is the battalion/task force commander's principal adviser on fire support matters. He recommends allocation of fire support, prepares fire support plans, assigns target numbers, and eliminates duplicate targets. He monitors requests for fire support and coordinates requests for fire. The FSO reports changes in the status of fire units and fire support requirements to maneuver and fire support commanders, insures maximum effectiveness of available fire support, and supervises the operation of the FSE.

	Personnel			Equipment									
	(CPT) FSO	(E7) Sr Fire Spt SGT	(E4) Fire Spt SP	M151A2 (w/tlr)	M561	M577	AN/GRC-160	AN/VRC-46	AN/VRC-47	AN/VRC-49	AN/GRA-39	KY-38	AN/PRC-77
Inf Bn (Mech)													
Armd Bn	1	1	2	1		1			1	1	2	2	
AC Sqdn (Div)													
Inf Bn	1	1	2	1					1	1	2	1	1
Inf Bn (Abn)*	1	1	2		1		2	1			2	1	
Inf Bn (AASLT)	1	1	2	1						1	2	1	1

*Personnel must be parachutists.

Figure G-2. Fire support section, battalion level.

G-4. Maneuver Brigade

a. FS sections for the various maneuver brigades are shown in figure G-3.

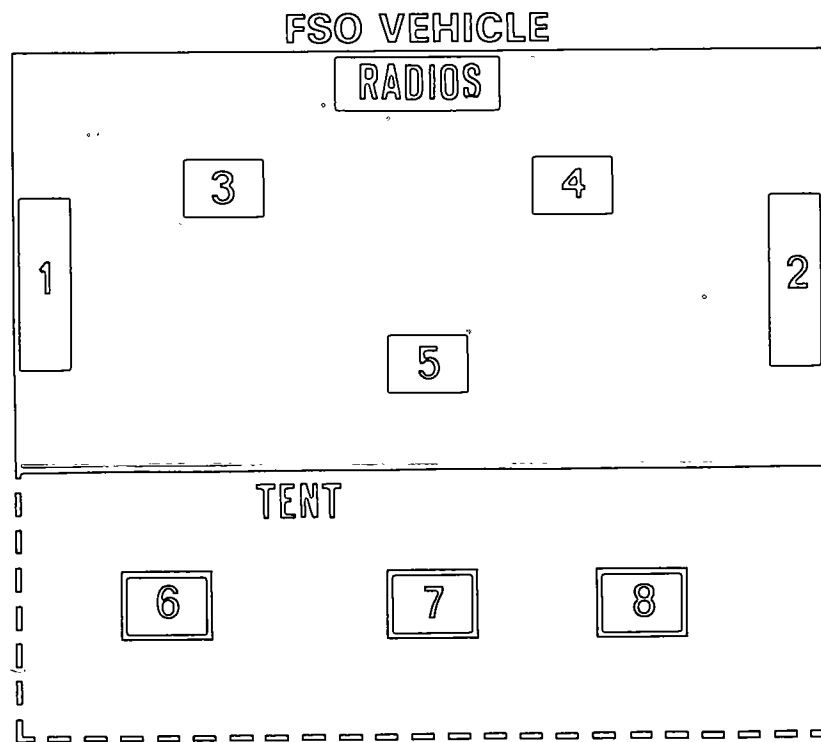
b. The DS FA battalion commander is the brigade FSCOORD. His full-time representative—the brigade FSO—remains at the brigade CP. There he supervises the battalion FSOs and he accomplishes the same advisory, planning, and coordinating tasks as those described for the FSO at battalion level (para G-3b).

c. A type layout for FSE at battalion/task force and brigade is shown in figure G-4. This layout varies with type DS FA battalion providing assets.

	Personnel			Equipment									
	(MAJ) FSO	(E7) Sr Fire Spt SGT	(E4) Fire Spt SP	M151A2 w/tlr	M577	M561	AN/VRC-46	AN/VRC-47	AN/VRC-49	AN/GRC-160	AN/PRC-77	AN/GRA-39	KY-38
Mvr Bde Mech Div Armd Div	1	1	2	1	1			1	1			2	2
Mvr Bde Inf Div	1	1	2	1					1		1	2	1
Mvr Bde* Abn Div	1	1	2			1	1			2		2	1
Mvr Bde AASLT Div	1	1	2	1					1		2	2	1

*Personnel must be parachutists

Figure G-3. FS section for maneuver brigades.



- Legend:**
- | | |
|------------------------------|------------------|
| 1 Fire support situation map | 5 FSO |
| 2 Fire support status charts | 6 ALO (CAS) |
| 3 Fire support SGT | 7 S3 air |
| 4 Fire support SP (RTO) | 8 Other advisers |

Figure G-4. Type layout for FSE at battalion/task force and brigade.

G-5. Division FSE s

a. Division command posts are divided into a tactical command post, a MAIN command post, and the division support area. FSE s operate at the tactical and MAIN command posts simultaneously and continuously.

b. Resources for FSE s come from the HHB, division artillery. Figure G-5 shows the assets required to operate FSE s for type divisions. These resources may vary slightly based on local conditions and command prerogative.

FIRE SUPPORT ELEMENTS

TYPES OF DIVISION

RESOURCE	RANK	ARMD	ABN	AASLT
		MECH INF		
PERSONNEL				
SR AFSCCOORD	O5	1	1	1
AFSCCOORD	O4	1	1	1
FA INTEL OFF	O4	1		1
TGT ANALYST	O3	2		1
AFSCCOORD	O3		2	
INTEL SGT	E8	1	1	1
OP SGT	E8	1	1	1
*FS SGT	E7	1	1	1
**FS SGT	E6	1	1	1
RATT OP TM CH	E5	1		
CLK TYPIST	E4	1	1	1
*FS SPECIALIST	E4	2	1	1
INTEL SP	E4		1	
RATT OP	E4	1		
RADIO OP	E3			1
RATT OP	E3	1		
TOTAL		15	11	11

*Converted from MOS 13E to 13F

**FSE authorized personnel must operate both tactical and main FSEs concurrently.

EQUIPMENT

VEHICLES:

TRK ¼-ton w/tlr	1		2
TRK 1¼-ton w/tlr	1	1	
TRK 2½-ton	1		
TRK VAN EXPANSIBLE	1		
TOTAL	4	1	2

RADIOS:

AN/VRC-46	1		
AN/VRC-47			1
AN/GRC-39	1	1	1
AN/GRC-160		1	
AN/GRC-142	1		
KY-38	1	1	1
TOTAL	4	3	3

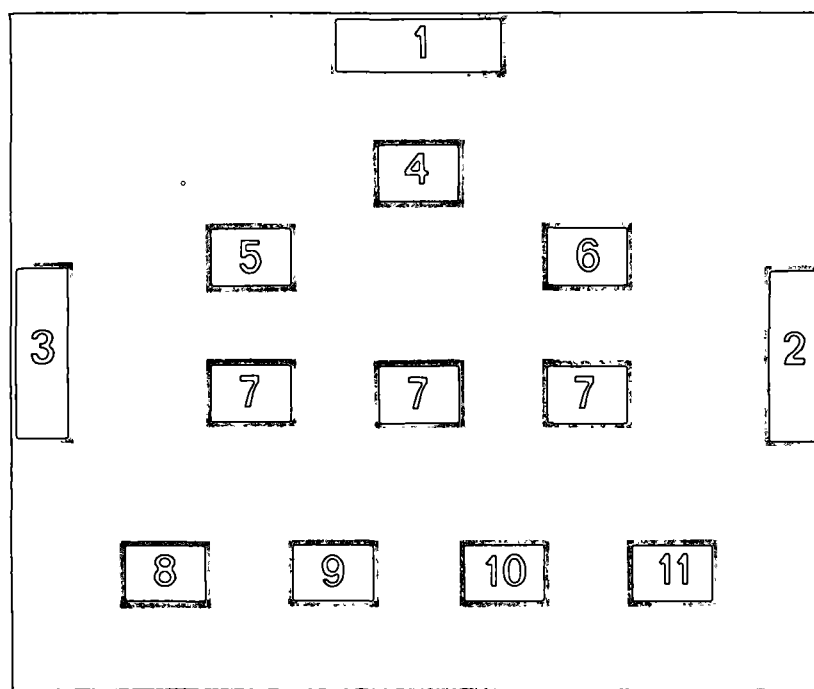
Figure G-5. FSE personnel and equipment.

c. The AFSCOORD (div FSE s) serves full time as a FSCOORD at either the tactical or MAIN FSE of the division. The senior AFSCOORD alternates between the tactical and MAIN FSE as the division CG does. The duties of an AFSCOORD are to plan and coordinate all means of fire support, to insure that these fires complement maneuver plans, and to coordinate the execution of fires to multiple means are safely used

simultaneously within the same general locale. In addition, he supervises the operation of the FSE, advises on fire support matters, and provides the G3 with fire support inputs to plans (orders).

d. Layouts for type division FSE s are shown in figures G-6 and G-7.

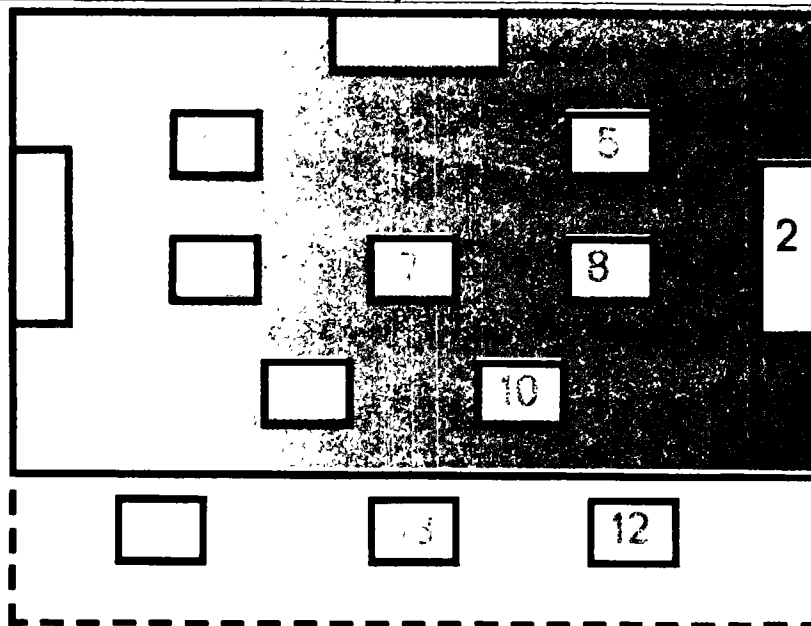
e. Additional discussion on division and Corps FSE operations is found in FM 6-20-2.



- Legend:**
- | | |
|------------------------------|----------------------|
| 1 Radios | 7 Fire Support EM |
| 2 Fire support status charts | 8 ALO (CAS) |
| 3 Fire support situation map | 9 Clerk-typist |
| 4 RTO | 10-11 Other advisers |
| 5-6 AFSCOORD s | |

Figure G-6. Type division TAC FSE.

VAN, 5 TON



- Legend:**
- | | |
|------------------------------|--|
| 1 Radios | 8 Intelligence/operations SGT s |
| 2 Fire support status charts | 9 AFSCOORD |
| 3 Fire support situation map | 10 Clerk-typist |
| 4 RTO | 11 Assistant G3 |
| 5 Fire support SGT | 12 All other fire support advisers (e.g., NGF) |
| 6 Target analysts | 13 ALO (CAS) |
| 7 Fire support specialist | |

Figure G-7. Type division MAIN FSE.

G-6. Corps FSE

a. The corps fire support elements (tac and main) are manned with personnel from the corps field artillery section (FAS), HHC, corps. Personnel and major items of equipment for FSE operation are shown below. Personnel operate in two shifts. For additional information see FM 6-20-2.

Personnel:

MAIN FSE (A TYPE)

1 05 AFSCoord
 1 04 Team Chief
 *1 04 FA Intel Off
 4 03 Target Analyst
 *2 03 Asst Intel Off
 1 E6 FS SGT
 1 E4 FS SP
 2 E4 Clk Typist

Note. Further information on the functioning of FS facilities is included in appendix I.

TAC FSE (A TYPE)

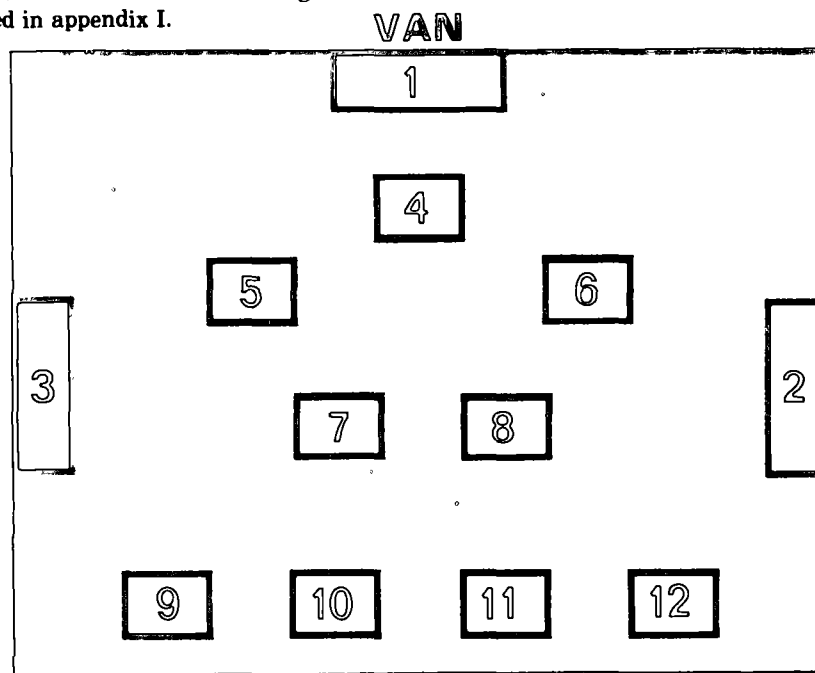
1 06 Deputy Corps FSCoord
 1 04 Team Chief
 1 E8 Asst Operations SGT
 1 E6 FS SGT

Major Equipment:

1 Drafting set
 1 FD set
 1 Plotting set
 1 Truck, 1¼-T, w/¾-T tlr
 1 Van, 5-T expansible (radios provided by comm sec, HHC, corps).

b. The FSCoord at corps performs basically the same duties as the division FSCoord. FS configurations are dependent on local conditions and the commander's desires.

c. A type layout for a corps main FSE is shown in figure G-8.



Legend: 1 Radios 2 Fire support status charts 3 Fire support situation map 4 Clerk-typist/RTO 5 Operations SGT 6 Operations SP	7 Target analysts 8 Intelligence SGT/SP 9 Operations officer 10 ALO (CAS) 11 AFSCoord 12 Other fire support advisers
---	--

Figure G-8. Corps FSE.

Section II. FIRE DIRECTION FACILITIES

G-7. Fire Direction

a. For FA operations, fire direction includes the exercise of tactical command of one or more units in the selection of targets, the concentration or distribution of fire, and the allocation of ammunition for each mission. It also includes the methods and techniques used in the FDC to convert target information into appropriate fire commands.

b. The resources for FDCs vary with the type of FA units concerned. This information is found in appropriate 6-series TOEs (MTOEs). TOEs are indexed in DA Pamphlet 310-3.

c. This section focuses primarily on fire direction for cannon field artillery. FM 6-42, *Field Artillery Battalion, Lance*, and (S) FM 6-39, *Pershing Organization*, describe missile fire direction.

G-8. Battery Fire Direction Center

Battery FDC duties are in FM 6-40 series field manuals. The primary role of the cannon battery FDC is technical fire direction—the conversion of calls for fire into appropriate fire commands. The battery FDC is run by the executive officer or the fire direction officer/assistant executive officer.

G-9. Battalion Operations/Fire Direction Center

The battalion FDC conducts both technical and tactical fire direction—the assignment of units to fire and fire control. At the cannon

battalion, the assistant S3—the battalion FDO—plans, coordinates, and supervises the activities of battalion and battery FDCs. He is also responsible for training FDC personnel, determining methods of attack, issuing fire orders, and seeing that appropriate records are maintained. These functions are defined in FM 6-20-1 and in FM 6-40-series field manuals.

G-10. The Division Artillery Tactical Operation Center

a. For FA fires, the division artillery tactical operations center (TOC) combines targeting, fire control, and fire direction functions.

b. TOC resources are defined in appropriate 6-series TOEs (MTOEs).

c. FM 6-20-2, *Division Artillery, Field Artillery Brigade, and Field Artillery Section (Corps)*, describes the functioning of the division artillery TOC.

G-11. Operations/Intelligence Element, Corps Field Artillery (FA) Section

a. Resources for the O/I element of the corps FAS are outlined in the TOE (MTOE) for Headquarters and Headquarters Company, Corps (TOE 52-2).

b. The O/I element combines the operations and intelligence functions necessary for the FA operations of that field artillery retained under corps control.



Appendix H Fire Support Terms and Techniques, Aids and Documents

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Appendix H

Fire Support Terms and Techniques, Aids, and Documents

WHY

- To prepare the fire support plans, fire support coordinators at all levels must understand the terminology, techniques, and documents used in fire planning.

WHAT

- This appendix discusses:
 - fire planning terminology and symbology;
 - fire planning and coordination techniques;
 - fire planning and coordination aids;
 - fire planning and coordination documents.

Section I. TARGET TERMS AND TECHNIQUES

H-1. Definitions

Target is the most fundamental term used in fire support planning. Targets are classified in several ways.

a. A target can be personnel, materiel, or a piece of terrain that is designated and numbered for reference and/or firing. Every target can be classified as either a planned target or a target of opportunity.

b. A target of opportunity is one that has not been planned; i.e., one on which fire *has not been prearranged*. Since planning is concerned with prearranging fires on targets, the remainder of the discussion in this appendix will be devoted to planned targets.

c. A planned target is one on which fire is prearranged. The key is *prearranged*. The degree of prearrangement will vary but some prior arrangement has been made. Individually planned targets may be further subdivided into either *scheduled* or *on-call* targets.

□ A *scheduled target* is a *planned target* on which fire is to be delivered in accordance with a *time sequence*. The time sequence may be related to H-hour or any other time reference; however, once this reference has been established, the scheduled target will have a definite time sequence.

□ An *on-call target* is a *planned target* to be fired *on request* rather than in accordance with a time schedule. The purpose of an on-call target is to reduce the reaction time to initiate fires from that required for a target of opportunity. The degree of prearrangement of an on-call target will influence the reaction time from request to execution—the greater the prearrangement, the less the reaction time.

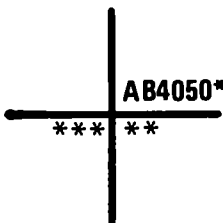
d. Priority targets are targets so designated by the maneuver commander by type, location, or time sensitivity. When he designates priority targets he should provide

specific guidance to the FSCoord as to when certain targets become priority targets, when they cease to be priority targets, the desired effects on the target, and any special type ammunition to be used (e.g., smoke or VX). A priority target is one that the firing units lay on when they are not engaged in a fire mission. Generally, each priority target will have one battery laid on it. However, in dedicated battery operations, a platoon may be laid on a priority target while the remainder of the battery supports the maneuvering unit. An example of a priority target in a defensive situation is the final

protective fire (FPF). Further information on FPFs may be found in paragraph H-5(e).

H-2. Target Symbols

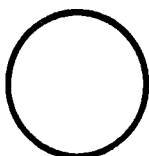
The use of symbology in the preparation of maps, charts, and overlays is basic to the military art. A complete discussion of general military symbols is presented in FM 21-30. The universal symbols used by the FSCoord at all levels are those that designate targets. They are shown on the chart below:

TYPE OF TARGET	SYMBOL	DISCUSSION
CONVENTIONAL		A cross is used. It may be canted if several targets are in close proximity to each other or when the symbol might be confused as a grid intersection. The intersection of the lines represents the center of the target. The target list, discussed later, describes the nature of the target and other pertinent information. (This symbology applies to targets planned for conventional ammunition.) <i>*Target number.</i> <i>**Target description.</i> <i>***Target altitude.</i>
LINEAR		This symbol is for those targets that are long and narrow (e.g., roads and trenchlines). Coordinates shown on the target list are for the center point. The target list will also show the length and attitude.
RECTANGULAR		These targets have both length and width. Coordinates shown on the target list are for the center point. The length and width shown on the target list represents the overall length and width of the target.

TYPE OF TARGET

SYMBOL

DISCUSSION

CIRCULAR

This symbol represents an area type target. Coordinates shown on the target list are for the center point. The radius of the target is also included on the target list.

SPECIAL

This symbol is used for nuclear targets. The upper right quadrant has the target number. The lower right quadrant contains the weapon type and yield. The lower left quadrant contains the delivery unit and TOT. The upper left quadrant contains the HOB or HOB option.

Note. For FA planning, if the dimensions of the target exceed the width of an open sheaf, or a depth of 250 meters, consideration should be given to creating multiple targets and including them in a *group* (discussed in paragraph H-4).

H-3. Target Numbering

To designate nonnuclear targets for fire support operations, the US Army adheres to appropriate provisions of STANAG 2147. These numbers consist of two letters followed by four numerals. *Example:* AA1000. The numbering system applies to each corps size force.

Control of target numbers is usually exercised by a force commander through his supporting field artillery (FDC and FSE).

Letters* Assigned To**By corps:**

A through G	First letters for divisions—in numerical order (low to high)
-------------	--

XA through XG	Sep bdes/regts (low to high)
---------------	------------------------------

XY	O/I elm, FAS
----	--------------

XZ	Corps FSEs
----	------------

*Letters O and I are not used.

By divisions (second letters):

A through G	Bdes (in numerical order—low to high)
-------------	---------------------------------------

Y—	Div arty TOC
----	--------------

Z—	FSEs
----	------

Numbers

Blocks of numbers are assigned by those headquarters having two assigned letters. FA elements with the second letters of Y and Z assign blocks, as needed. Maneuver elements with the second letters of A through G assign numbers as follows:

0000-1999	FSE
2000-2999	FSO, lowest numbered maneuver bn/sqdn**
3000-3999	FSO, 2d bn/sqdn
4000-4999	FSO, 3d bn/sqdn
5000-6999	Additional FSOs
7000-7999	FDC, DS FA
8000-9999	As needed***

**Lowest regimental number (e.g., FSO, 2-406 Inf before FSO, 1-407 Inf).

***Block 8000-8999 may be reserved for counterfire targets. Block 9000-9999 may identify toxic chemical targets.

Battalion (squadron) size elements with a block of numbers may suballocate as follows:

000-199	FSE
200-299	FIST, Co A****
300-399	FIST, Co B
400-499	FIST, Co C
500-699	Additional FISTs
700-799	Bn mort plt/sqdn/how btry
800-999	As needed

****If additional numbers are needed, FIST chiefs get them from supervising FSOs.

A sample use of the six-place target numbering system is a target numbered CB1051. The letter C indicates the target was planned by the 3d lowest numbered division of the corps. The letter B identifies the division's 2d brigade. The number 1051 comes from the block of the brigade's FSE.

H-4. Multiple Targets

There are several FA fire planning techniques which are useful when fire is

desired on several targets. Groups, series, or programs of targets may be established in these instances. The manner in which each of these is graphically portrayed, the level at which it is established, and its purposes are discussed below.

a. Groups of Targets.

A group of targets consists of two or more targets on which simultaneous fires are desired. For FA fires, the DS battalion FDC is the lowest echelon that has the capability to plan and implement a group of targets. The FIST chief or fire support officer determining the need for a group of targets requests that the group be planned by his DS battalion fire direction center. The planning of groups of targets can be a time-consuming process requiring considerable firing assets; therefore, if the DS battalion does not have the assets available to fire the group, it may pass the request to the division artillery TOC for planning.

(1) A group of targets is graphically portrayed by circling the targets and identifying them with a group designation (fig H-1). The group designation consists of the letters assigned to the maneuver brigade or the division artillery TOC with a number inserted between them. For example, if the brigade is assigned the letters A and B, the first group of targets planned by the DS battalion FDC is designated A1B, the second group A2B, etc. Similarly, if the division artillery TOC has the letters A and Y, its first group is A1Y, the second, A2Y, etc.

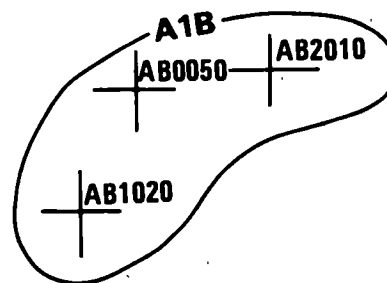


Figure H-1. Group of targets.

(2) The fact that targets are included in a group does *not* preclude the attack of individual targets within the group.

(3) A group of targets will always be depicted on a scheduling worksheet, and there may be more than one group on a scheduling worksheet. Groups of targets are normally fired on call of the requesting unit.

b. Series of Targets.

A series of targets consists of a number of targets and/or groups of targets planned in support of a maneuver phase. The DS FA battalion FDC is the lowest echelon authorized to form and designate a series of targets. A series of targets might be planned to support a limited attack, a final assault, a counterattack, or a phased withdrawal. It

should be planned to complement the maneuver commander's scheme of maneuver. It may be initiated on call, at a specific time, or when a particular event occurs.

Once a series is initiated, targets and groups of targets within the series are fired on a predetermined time sequence. Simultaneous engagement of targets in a group within a series is *not* mandatory. Phasing of targets within a series is as requested by the initiator or as determined by the FA fire planner based upon the nature of the targets and the desires of the force commander.

Graphically a series is shown as individual targets and/or groups of targets within a

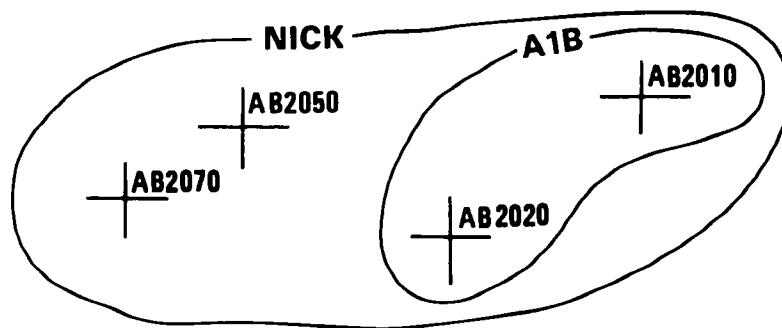


Figure H-2. Series of targets.

prescribed area. The series is given a code name or nickname as shown in figure H-2.

The fact that a series of targets has been formed does *not* preclude the attack of individual targets and/or groups of targets within the series. A scheduling worksheet will be prepared for each series of targets requested.

c. Program of Targets.

A program of targets is a number of planned targets of a *similar* nature. All targets in a particular program are of the same type (e.g., all ADA, all OP s, all mortar

targets, etc.). A program of targets may be initiated on call, at a specified time, or when a particular event occurs. Once a program is initiated, targets within the program are fired on a predetermined time sequence as listed in the schedule. A program is usually designated by its nature (e.g., counter OP program; counterfire program). The lowest echelon that normally designates and plans a program of targets is the DS FA battalion. There are no graphics to depict a program. They are shown on scheduling worksheets and schedules.

H-5. Categories of Fire Support

Fire support agencies are capable of providing the maneuver commander with several categories of fire designed to complement his activities. Some of these apply to offensive or defensive actions only, while others are appropriate to all types and levels of combat.

a. Preparation.

The preparation is planned by the DS FA battalion or higher echelon. It is an intense volume of fire delivered in accordance with a time schedule and supports an attack. The fires normally commence prior to H-hour and may extend beyond it. They may start at a prescribed time or be held on-call until needed. The duration of the preparation is influenced by many factors, including fire support needs of the entire force, number of targets and firing assets, and ammunition available.

A preparation is normally phased to permit successive attacks on certain types of targets. The first phase should provide for the early attack of hostile fire support means and all observation systems. The second phase should include command posts, communications facilities, assembly areas, and reserves. The final phase should include defensive areas in the forward portion of the enemy position and targets that pose an immediate threat to the attacking force. Provisions should be made to maintain neutralization of hostile fire support means and other critical targets throughout the preparation, time and ammunition permitting.

When assigning fire support systems to targets in the preparation, planners should, if possible, insure that some fire units remain available to attack targets of opportunity. However, there may be times during the firing of the preparation that a target of opportunity poses such an immediate threat to the supported maneuver unit that additional fire units should depart the preparation to attack the target of opportunity. The FA S3 diverts a portion of

his firepower from the preparation to engage the target designated by the supported maneuver commander.

If fire units are diverted from the preparation, they must reenter it at the current time as indicated on the schedule of fires, not at the time they departed. This means that some scheduled targets may not be attacked at all or may only be attacked by some of the assets originally planned to meet the commander's guidance during the preparation. This procedure does, however, insure common understanding throughout the command and provides for the safety of all concerned.

Preparations, when planned, are continually updated to delete old targets and incorporate new ones. The maneuver commander, with the advice of his FSCOORD, makes the final determination as to whether the preparation should be fired. This decision is based upon such considerations as:

- ☐ Will the loss of surprise from a preparation be offset by the damage done to the enemy?
- ☐ Are there sufficient targets to warrant a preparation?
- ☐ Are enough fire support agencies available to support the preparation?
- ☐ Can the enemy recuperate before the fires can be exploited?

b. Counterpreparation.

The counterpreparation is planned by the DS FA battalion or higher echelons each time the supported force makes an extended halt. Counterpreparation fire is intense, prearranged fire delivered when the imminence of the enemy attack is discovered. Fires should provide for early and simultaneous attack of enemy forward elements, his indirect fire support means, and his OP's. Next the enemy's command posts, communications, and reserves should be attacked while neutralization of his indirect fire support means is maintained. These

intensive prearranged fires are delivered just prior to the start of an enemy attack. This fire support is designed to:

- ☐ Break up formations.
- ☐ Disorganize command, control, and communication.
- ☐ Impair target acquisition means/methods.
- ☐ Decrease the effectiveness of fire and maneuver elements.
- ☐ Destroy personnel and equipment.
- ☐ Reduce the enemy's offensive spirit.

The maneuver force commander, with the advice of his FSCOORD, decides when the counterpreparation will be fired. Premature firing of the counterpreparation is avoided whenever possible in order to avoid disclosing targets for enemy counterfire.

c. Harassing and Interdiction Fires.

(1) Harassing fires are delivered on confirmed and suspected enemy locations for the purpose of disturbing the rest, curtailing the movement, and lowering the morale of enemy troops by the threat of casualties or loss of equipment. Targets considered for harassing fires include firing positions, supply installations, command posts, assembly areas, and observation posts.

(2) Interdiction fires are delivered on selected terrain for the purpose of denying the enemy the unrestricted use of these areas. Targets considered for interdiction fires include road junctions, bridges, stream and river crossing sites, and defiles.

(3) Harassing and interdiction fires are usually planned by division based on intelligence from the all-source intelligence system. They are delivered at irregular times so as to form no predictable pattern from which an enemy can take evasive action. Deception must be considered to avoid disclosing the amount and location of units participating in harassing/interdiction fires. Deception measures available to indirect fire systems include firing from supplementary positions, using multiple weapons per target,

and using single weapons from alternate units during each period of engagement. Harassing/interdiction fires are costly in terms of logistics and increased vulnerabilities; therefore, they should be employed only when they will provide for effective results that complement the overall force operation.

d. Counterfire.

The purpose of counterfire is to attack enemy indirect fire systems (mortars, cannons, rockets/missiles, etc.). The division commander should provide guidance to his FSCOORD for the attack of counterfire targets. This guidance should include:

- ☐ Priority of targets/fires.
- ☐ Extent of damage desired.
- ☐ Ammunition constraints.
- ☐ Friendly artillery survivability considerations.

In addition to the counterfire program, counterfire targets are normally included in preparations and counterpreparations, but may be fired on call or as targets of opportunity to both maneuver and artillery units through normal fire support channels.

e. Indirect Final Protective Fires (FPF).

These are immediately available preplanned fires designed to create a barrier to impede enemy movement across defensive lines or areas. These fires are integrated with the maneuver commander's defensive plans. The brigade commander allocates FPF's to maneuver battalions and they are further allocated to companies. The shape and pattern of FPF's may be varied to suit the tactical situation. The maneuver commander is responsible for the precise locations of FPF's. The FIST chief is responsible for:

- ☐ Reporting the desired location of the FPF to the supporting FDC.
- ☐ Adjusting fire (by piece) on the desired location.

- Transmitting the call to fire FPF to the supporting FDC.

Authority to call for the FPF is vested in the maneuver commander (normally the company commander or platoon leader) in whose area the FPF is located.

f. Fires Using Smoke.

(1) *Obscuration Fires.* This category of fires uses smoke and WP ammunition to suppress the enemy by obscuring his view of the battlefield. HE ammunition may have an obscuration effect due to secondary explosions, dust, and fires, but this should not be relied upon. Because smoke is susceptible to changes in wind direction and the configuration of the terrain, its use must be coordinated with the maneuver commander and all other friendly units affected by the operation. Used properly, obscuration fires can:

- Slow enemy vehicles to blackout speeds.
- Obscure the vision of direct fire weapons crews.
- Reduce accuracy of enemy observed fires by obscuring OP's/CP's.
- Cause confusion and apprehension among enemy soldiers.
- Limit the effectiveness of the enemy's visual command and control signals.

(2) *Screening Fires.* Closely related to obscuration fires, screening fires also involve the use of smoke and WP. Screening fires, however, are used to mask friendly maneuvering elements in order to disguise the nature of their operations. They are, for example, used to screen river crossings or an enveloping force. Moreover, screening fires may be used to:

- Assist in consolidating an objective by placing smoke in areas beyond the objective.
- Deceive the enemy into believing that a unit is maneuvering when it, in fact, is not.

Generally, screening fires require the same precautions as obscuration fires. Smoke screens, however, must be sufficiently large so that random enemy firing into them will

not produce excessive casualties. Moreover, the establishment of a pattern in the use of smoke with maneuver should be avoided (e.g., habitually firing smoke 2 km in front of troops).

g. Illumination.

This special effect fire is designed to provide friendly forces with light to assist them in night operations or to harass the enemy. It may be scheduled or on call and is used to:

- Illuminate areas of suspected enemy movement.
- Permit our surveillance of the battle area.
- Assist in the adjustment of other (HE) fires.
- Harass the enemy.
- Assist friendly night patrols or attacking units to maintain direction.

h. Registration.

Registrations are fires that allow FA units to obtain corrections for firing data that will insure more effective engagement of subsequent targets. Registrations are conducted by the firing units and their observers after coordination with the FSO and the S3. They can be fired from offset positions or to the rear, for deception purposes and may be integrated with other firing to further disguise their nature.

i. Suppression Fire.

Suppression fire can be accomplished using both direct and indirect fire. It is brought to bear on known or suspected enemy locations to degrade the enemy's capability to place effective fire on friendly elements or otherwise impede friendly operations. Immediate response is more important than accuracy in firing suppression. These fires may be either preplanned or immediate. Suppression missions do not require HE ammunition; smoke may be used against direct fire weapons. However, suppression by smoke takes more time than suppression by HE.

Section II.

FIRE SUPPORT PLANNING AND COORDINATION AIDS

The fire support planner, regardless of the level at which he works, uses various aids to assist him in accomplishing his mission. These may range from scratch paper to formal documents and graphical aids. These tools allow him to:

- ☐ Update data.
- ☐ Record changes in fire support status.
- ☐ Gain immediate access to fire support data.
- ☐ Transmit fire support data rapidly.

H-6. Fire Support Status Chart

a. For an FSO at TF or brigade, a single fire support status chart will usually suffice. At higher levels, the FSCoord may need several charts. The chart should reflect the current status of available fire support means. (*See figure H-3.*)

b. Examples of information needed include designations, locations, missions, call signs/frequencies of any systems responsive to the unit's fire support needs. Assignments to fire support tasks should be shown on a chart. At higher planning levels, this may necessitate a chart for each means of fire support. Advisers from these various systems maintain the charts. The size of chart depends upon the storage space available during movements. Whenever possible, standardization throughout the force should be considered.

FIRE SUPPORT STATUS CHART

Figure H-3. Type fire support status chart.

AVAILABLE FIRE SUPPORT			POSTED		AMMO STATUS POSTED			SIGNIFICANT EVENTS	
UNIT	LOCATION	MISSION	CALL SIGN	REMARKS	TYPE	AVL?	REMARKS	DIG	EVENT
FINAL PROTECTIVE FIRES Period to			REMARKS		TGTS ENGAGED Period to				
FIRE UNIT	SPTD UNIT	SIGNAL			TGTS	WPN RESULTS			

H-7. Fire Support Coordination Measures

The FSCoord coordinates all fire support impacting in his zone, including that requested by his supported unit. The FSCoord insures that fire will not jeopardize troop safety, interfere with other fire support means, or disrupt adjacent unit operations. Coordinating measures assist him in these efforts.

a. Boundaries determined by maneuver commanders establish the operational zone for a maneuver unit and the area in which the commander fires and maneuvers freely. A unit may fire and maneuver against *clearly identified* enemy targets near or over its boundary *provided that* such action does not interfere with adjacent units. If such action may interfere, coordination is required.

b. Coordination measures designate portions of the battlefield where actions may or may not be taken. The FSCoord recommends them and the commander establishes them. They facilitate operations by establishing rules and guidelines for selected areas for a given period of time.

There are two categories:

- Permissive.
- Restrictive.

Figures H-4 and H-5 show primary permissive and restrictive coordination measures.

(1) *Permissive* measures are drawn in black on overlays/maps. They are titled and indicate the establishing headquarters and

the effective date/time group. Permissive measures mean that fire into an area or across a line need not be further coordinated, so long as they remain within the zone of the establishing headquarters.

(2) *Restrictive* measures are drawn in red. They are titled and indicate the establishing headquarters and the effective date/time group. Restrictive measures mean that fires into an area or across a line must be coordinated with the establishing headquarters on a case-by-case basis

H-8. The Fire Support Situation Map

This map is used to show fire support information in graphic form. It is a map sheet covered with acetate on which unit locations may be plotted. Overlays are made from this map. Its size is dictated by the area of operations of the supported unit and the work space available.

H-9. Overlays

Many types of overlays may be prepared. They are usually made on acetate or tracing paper. An overlay contains marginal information that identifies it, relates it to a map sheet, and allows it to be oriented (tick marks). Some of the types of overlays used by fire support planners are listed below:

a. The Tactical Situation Overlay (*Fig H-6*).

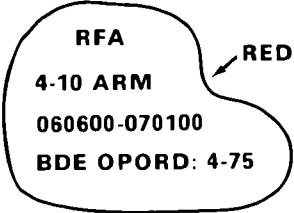
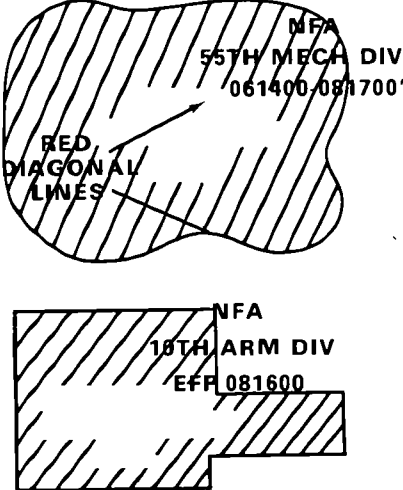
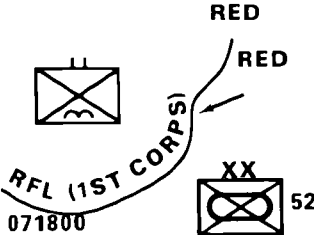
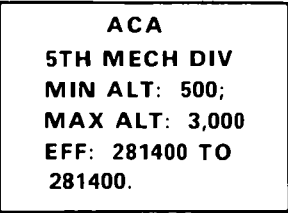
This overlay displays the tactical situation. It shows locations of boundaries, phase lines, and other maneuver control measures as well as indicating the position for indirect fire coordinating measures.

PERMISSIVE MEASURES

MEASURE AND ITS PURPOSE	ESTABLISHED BY	LOCATED	DISSEMINATION	GRAPHIC PORTRAYAL
COORDINATED FIRE LINE (CFL) A line beyond which conventional surface fire support means (mortars, field artillery, and naval gunfire ships) may fire any time within the zone of the establishing headquarters without additional coordination. <i>Purpose</i>—to expedite attack of targets beyond the CFL.	Brigade or division. May be established at battalion.	As close as the supported CO desires to "open up" an area to fires.	Through both maneuver and fire support channels to higher, lower, and adjacent maneuver and supporting units.	CFL (HQ) CFL (3D BDE) EFF DTG 071800 (BLACK)
FIRE SUPPORT COORDINATION LINE (FSCL) A line beyond which all targets may be attacked by any weapon system (including aircraft and special weapons) without endangering troops or requiring additional coordination with the establishing headquarters. The effects of any weapon system may not fall short of this line. <i>Purpose</i>—To expedite the attack of targets beyond the fire support coordination line.	Corps or Division (independent).	Normally placed on terrain identifiable from the air.	Through both maneuver and fire support channels to higher, lower, and adjacent maneuver and supporting units, to include air fire control agencies.	FSCL (HQ) FSCL (2D CORPS) EFF DTG 071800 (BLACK)
FREE FIRE AREA (FFA) A specific, designated area into which any weapon system may fire without additional coordination with the establishing headquarters. <i>Purpose</i>—To expedite fires, and to facilitate the jettison of CAS munitions if the aircraft are unable to drop on the target.	The commander, usually division or higher, following coordination with host nation.	On identifiable terrain, when possible; by grid designation if necessary.	Through both maneuver and fire support channels to higher, lower, and adjacent maneuver and supporting units; and the host nation.	FFA I CORPS 082000-082400 OR Eff 082000 (BLACK)

Figure H-4. Permissive coordination measures.

RESTRICTIVE MEASURES

NOTES	MEASURE AND ITS PURPOSE	ESTABLISHED BY	LOCATED	DISSEMINATION	GRAPHIC PORTRAYAL
	RESTRICTIVE FIRE AREA (RFA) An area in which specific restrictions are imposed and into which fires that exceed those restrictions will not be delivered without coordination with the establishing headquarters. <i>Purpose</i>—To regulate fires into an area according to the stated restrictions.	Battalion or higher; or independently operating company.	On identifiable terrain, by a grid or a radius (M) from a center point.	Through both maneuver and fire support channels to higher, lower, and adjacent maneuver and supporting units.	
	NO-FIRE AREA (NFA) An area in which no fires or the effects of fires are allowed. Two exceptions include: 1. When establishing headquarters approves fires (temporarily) within NFA on a mission basis. 2. When an enemy force within the NFA engages a friendly force, the commander may engage the enemy to <i>defend his force</i>. <i>Purpose</i>—To prohibit all fires or their effects into an area without prior clearance.	Division or corps in concert with host nation.	On identifiable terrain, by a grid or a radius (M) from center point.	Through both maneuver and fire support channels to higher, lower, and adjacent maneuver and supporting units.	
	RESTRICTIVE FIRE LINE (RFL) A line established between converging friendly forces (one or both may be moving) that prohibits fires or effects from fires across the line without coordination with the affected force. <i>Purpose</i>—To prevent interference between converging friendly forces.	The common commander of the converging forces.	On identifiable terrain usually closer to the stationary force.	Through both maneuver and fire support channels to higher, lower, and adjacent maneuver and supporting units.	
	AIRSPACE COORDINATION AREA (ACA) A block of airspace in the target area in which friendly aircraft are reasonably safe from friendly surface fires. It may occasionally be a formal measure (a three-dimensional box in the sky). More frequently, it will be informal (e.g., "keep the FA and NGF north of GREEN RIVER, CAS to the south.").	Brigade or higher level commander.	Above the target as recommended by the ALO. Size to be dictated by type aircraft and ordnance.	Through both maneuver and fire support channels to higher, lower, and adjacent headquarters and supporting units. Information includes minimum and maximum altitude, length (2 coordinates), width, effective DTG.	

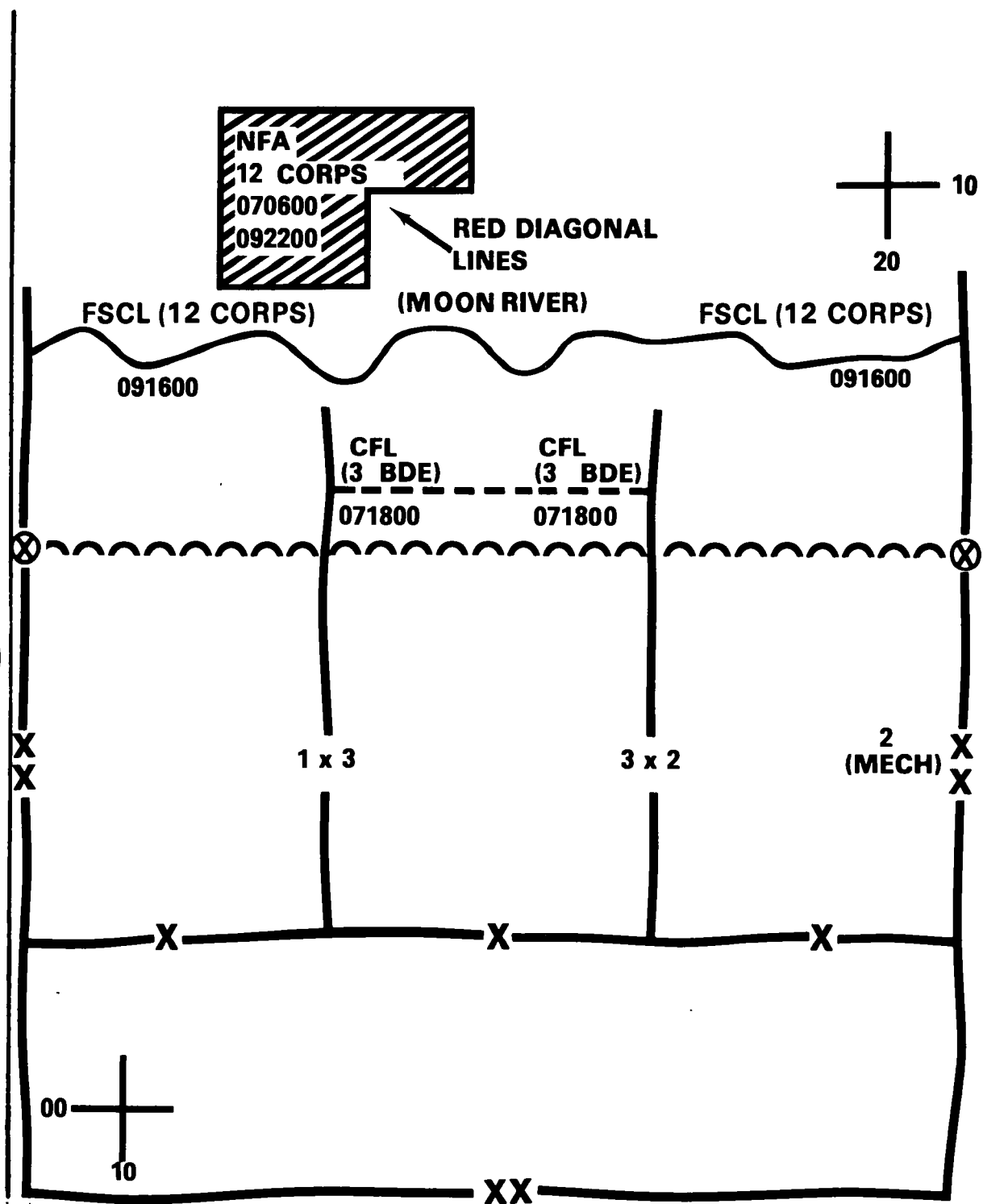


Figure H-6. Tactical situation overlay.

b. The Target Overlay (*Fig H-7*).

The target overlay shows the locations of targets, groups, and series as appropriate. It enables the FSCOORD to graphically view all the targets planned in support of the

maneuver force. This overlay is one of the key documents used to produce the fire support plan and is discussed in that context in section III.

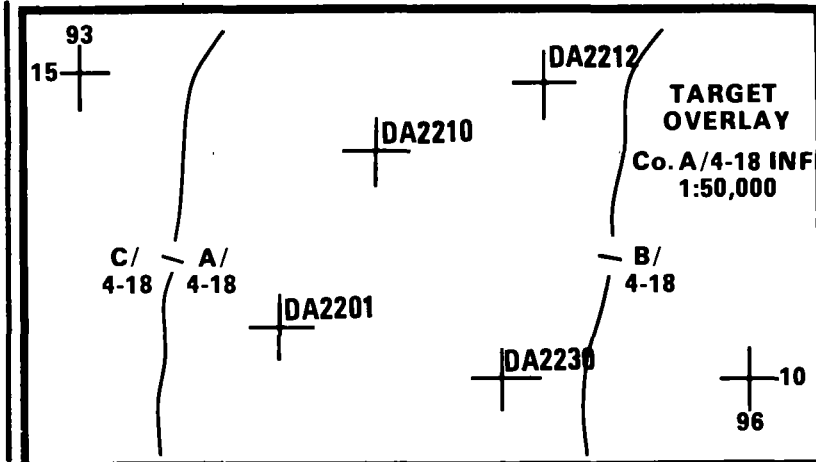


Figure H-7. Target overlay.

c. The Target Acquisition Capabilities Overlay (*Fig H-8*).

This overlay portrays the target acquisition coverage of the maneuver forces zone. It points up "dead spots" in the coverage and allows the planner to reposition assets to cover them.

d. Other Overlays.

Additional overlays may be prepared to portray a wide range of information, such as:

- ☐ contingency plans,
- ☐ flight corridors,
- ☐ counterfire targets,
- ☐ patrol plans, and
- ☐ air defense.

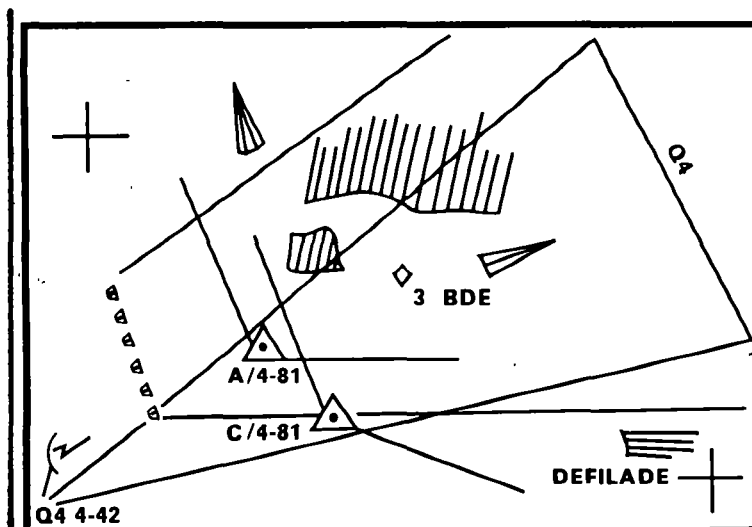


Figure H-8. Type target acquisition capabilities overlay.

Section III.

FIRE SUPPORT DOCUMENTS

H-10. Fire Support Plan

The fire support plan contains the information necessary for understanding how fire support will be used to support the operation. The fire support plan will be a subparagraph of paragraph 3 of the OPORD and should include a subparagraph for each fire support system involved. Appropriate fire support representatives prepare each subparagraph and then the field artillery representative, as the fire support officer or fire support coordinator, compiles all fire support subparagraphs into the fire support plan. If the division fire support plan includes a target list, it will list only those targets that the division commander thinks are critical to division operations. Likewise, a target list in a brigade fire support plan will list only those targets the brigade commander thinks are critical to the brigade operation.

The fire support plan should not include "how to implement" instructions to individual fire support agencies; information peculiar to each fire support means should be addressed in SOPs or implementing instructions subsequent to receipt of the fire support plan. If the operation requires lengthy or detailed plans or if paragraph 3 becomes unwieldy, a fire support annex may be prepared to amplify the instructions in the fire support plan.

H-11. Support Plans

a. When formal planning is taking place, specific agency support plans (e.g. FA support plan, NGF support plan, CAS plan, nuclear support plan, chemical support plan) are prepared as required to amplify the fire

support plan of the force (subparagraph of paragraph 3, OPORD). These plans provide the implementing instructions to the FS agencies based on the guidance in the fire support plan.

b. Each of these plans contains a written portion (five-paragraph field order format). The written portion is the basic document and provides the necessary implementation instructions to the delivering elements. Depending on the plan (see appendix I, section III, and tabs C through G), overlays, target lists, and schedules may be attached for clarity and amplification.

c. In addition to the written portion as discussed above, the field artillery support plan normally contains a target list and schedules. The following documents are either part of the plan or are tools used in the preparation of the plan. STANAG 2031 provides additional discussion on the format for FA fire plans.

(1) *Target list worksheet (fig H-9)* is used to record all known information about targets. It is not part of the FA support plan, but is used to develop the target list, which is a part of the plan.

[illegible]DA FORM 4655
1 OCT 77

FOR USE OF THIS FORM SEE FORM M-20 THE PROPOSING AGENCY IS THE JR ARMY TRAINING AND DOCTRINE COMMAND

Figure H-10. Target list worksheet.

(2) *Target overlay (fig H-7)*, discussed earlier, is a display of targets, coordinating measures, and artillery positions. It is used to aid in resolving target duplications, evaluating adequacy of planned support in relation to the scheme of maneuver or plan of defense, and in determining the most appropriate unit(s) to attack each target. It is not forwarded as part of the FA support plan to delivery units.

(3) *Scheduling worksheets (fig H-10)* depict the allocation of targets to firing units subordinate to the preparing field artillery headquarters. They also show when targets will be engaged and what type and amount of ammunition will be fired on each target. Scheduling worksheets will be prepared for series, groups, and programs. These worksheets are not part of the FA support plan, but are used to develop schedules that are part of the plan.

(PREPARATION for -- DIVOPORD 20)			SCHEDULING WORKSHEET																	REMARKS
LINE NO	ORGANIZATION AND CALIBER	FIRING UNITS	-5	-4	-3	-2	-1	0	+1	+2	+3	+4	+5	+6	+7	+8	+9	+10		
1	1-123FA	A	BY 2170 1B				BY 2180 1B		BY 0650											
2	(155 SP)	B																		
3		C																		
4																				
5																				
6																				

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Figure H-11. Scheduling worksheet.

(4) *Target list (fig H-11)* is a compilation of targeting data planned to support an operation. It contains data extracted from the target list worksheet; however, it is in a

format easier to duplicate and transmit than is the target list worksheet. It contains only targeting data required for computation of technical fire data.

(CLASSIFICATION)

INCLOSURE 1 (TARGET LIST) TO APPENDIX _____ (FIELD ARTILLERY SUPPORT PLAN)
TO ANNEX _____ (FIRE SUPPORT PLAN) TO OPORD 1-75.

Reference: Map, Series L210, ZURANIA, Sheets 3061I (PILAK) and 3061II
(KRAN) Edition 01, 1:50,000.

<u>LN#</u>	<u>(a)</u> <u>TGT#</u>	<u>(b)</u> <u>DESCRIPTION</u>	<u>(c)</u> <u>LOCATION</u>
1	BB4070	Suspected Sig Cen	8761 8485
2	BB4080	Regt CP	8360 8350
3	BZ2171	Suspected 122-mm How Btry	894 790
4	BA3223	152-mm How Btry	933 795
5	BA3230	Suspected OP	889 802
6	BC2574	122-mm How Btry	906 787
7	BY0036	130-mm Gun Btry	937 822
8	BB4092	Suspected OP	948 812
9	BB4102	Suspected Regt CP	920 810
10	BY0049	Bn CP	818 799
11	BZ2188	122-mm How Btry	980 830
12	BZ2194	152-mm How Btry	9482 8471
13	BZ2201	Bn CP	918 420
14	BA3241	AT Wpn Site	930 820
15	BA3257	Bn Assy Area	796 822
16	BY0056	122-mm How Btry	815 819
17	BY0065	OP	986 751
18	BY0073	OP	975 812
19	BB4112	152-mm How Btry	9303 8072
20	BB4124	Regt CP	8807 7615

Remarks:

Figure H-12. Target list.

(5) *Schedules (figs H-12 and H-13)* contain the same information depicted on scheduling worksheets. Schedules, however,

are in a format easier to duplicate and transmit to fire units than are scheduling worksheets.

(CLASSIFICATION)

INCLOSURE 2 (PREPARATION SCHEDULE) TO APPENDIX _____ (FIELD ARTILLERY SUPPORT PLAN) TO ANNEX _____ (FIRE SUPPORT PLAN) TO OPORD 1-75.

Reference: Map, Series L210, ZURANIA, Sheets 3061I (PILAK) and 3061II (KRAN), Edition 01, 1,50:000.

<u>LN#</u>	(a) <u>UNIT</u>	(b) <u>TGT</u>	(c) <u>ROUNDS</u>	(d) <u>TOT</u>
1	A/3-42	BZ2180	36(a)	H-25
		BC2570	6	H-19
		BY0051	24	H-18
		BY0063	18(b)	H-14
		BB4090	18(b)	H-11
		BB4124	36	H-8
		BB4146	6	H-2
		BA3262	42	H-1
2	B/3-42	BC2572	18	H-25
		BZ2199	24	H-22
		BY0058	24	H-18
		BY0074	18(b)	H-14
		BY0041	18	H-11
		BB4121	36	H-8
		BB4147	6	H-2
		BA3266	42	H-1
3	C/3-42	BC2575	18	H-25
		BZ2193	24	H-22
		BY0052	24	H-18
		BA3234	18(b)	H-14
		BY0040	18	H-11
		BZ2200	24	H-8
		BB4131	18	H-4
		BA3263	42	H-1
4	A/3-43	BA3220	12(a)	H-25
		BB4114	20	H-19
		BB4076	12	H-9
		BA3242	4	H-3
		BA3272	16(a)	H-1
5	B/3-43	BY0039	20(a)	H-25
		BZ2178	12	H-15
		BB4084	12	H-9
		BA3241	4	H-3
		BA3271	16(a)	H-1
6	C/3-43	BA3227	12(a)	H-25
		BB4116	20	H-19
		BB4075	12	H-9
		BA3243	4	H-3
		BA3272	16(a)	H-1
		BB4154	20(a)	on-call

Remarks:

(a) VT fuze

(b) 50% VT fuze

NOTE: Last rounds impact NLT H-hour

Figure H-13. Preparation schedule.

(CLASSIFICATION)

INCLOSURE 3 (SERIES PAUL SCHEDULE) TO APPENDIX ____ (FIELD ARTILLERY SUPPORT PLAN) TO ANNEX ____ (FIRE SUPPORT PLAN) TO OPORD 1-75.

Reference: Map, Series L210, ZURANIA, Sheets 3061I (PILAK) and 3061II (KRAN), Edition 01, 1:50,000.

<u>LN#</u>	<u>(a)</u> <u>UNIT</u>	<u>(b)</u> <u>TGT</u>	<u>(c)</u> <u>ROUNDS</u>	<u>(d)</u> <u>TOT</u>
4	A/3-43	DB4100	12	0
		DA3270	12	+5
5	B/3-43	DA3241	8(a)	0
		DA3263	16	+3
6	C/3-43	DA3250	16(b)	0

Remarks:

- (a) 50% VT
- (b) FZ VT

Figure H-14. Series Paul schedule.

H-13. Summary

This appendix is a brief overview of the tools, aids, and documents used by the FSCOORD in his day-to-day operations. Appendix I contains detailed discussion of how to prepare the documentation and write the fire support plan; it also gives the sequence of action by FSCOORD s at various levels.

Appendix I Fire Support Planning and Coordination

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Appendix I

Fire Support Planning and Coordination

Fire support planning and coordination are separate and distinct functions that occur simultaneously at all levels from company to corps. Planning is *how to* use fire support assets; coordination is all the actions necessary to *make the plan happen*.

Section I. PLANNING AND COORDINATION FACILITIES

WHY

- Fire support planning and coordination *drive* the fire support system to respond to the force commander's requirements. The FSCOORD must understand planning and coordination to generate the most support from the system.

WHAT

- This appendix tells you:
 - the fire support elements involved in the planning and coordination process;
 - how formal fire support planning is conducted and the documents produced;
 - how informal fire support planning is conducted;
 - how fire support coordination is accomplished.

I-1. General

Fire support planning and coordination are functions of command delegated by the force commander to the senior FA representative present with his force. At corps, division, and brigade levels, the commander of the supporting FA (corps artillery commander, division artillery commander, and the commander of the DS FA battalion) is the FSCOORD, responsible to the force commander for the efficient and effective use of *all* fire support means. At battalion and company levels, the FSCOORD is a representative of the DS FA battalion commander. At each echelon from corps to company, the FSCOORD establishes a facility to perform the planning and coordination of fire support. These facilities are collocated with the operations center at each echelon as shown in figure I-1.

These facilities provide full-time personnel on duty for planning of fires and the day-to-day, mission-by-mission coordination of those fires in compliance with the guidance of the force commander and the FSCOORD. Armored cavalry regiments and squadrons have their own organic fire support officers. For a specific breakdown of the personnel and major items of equipment in each facility, see appendix G of this manual.

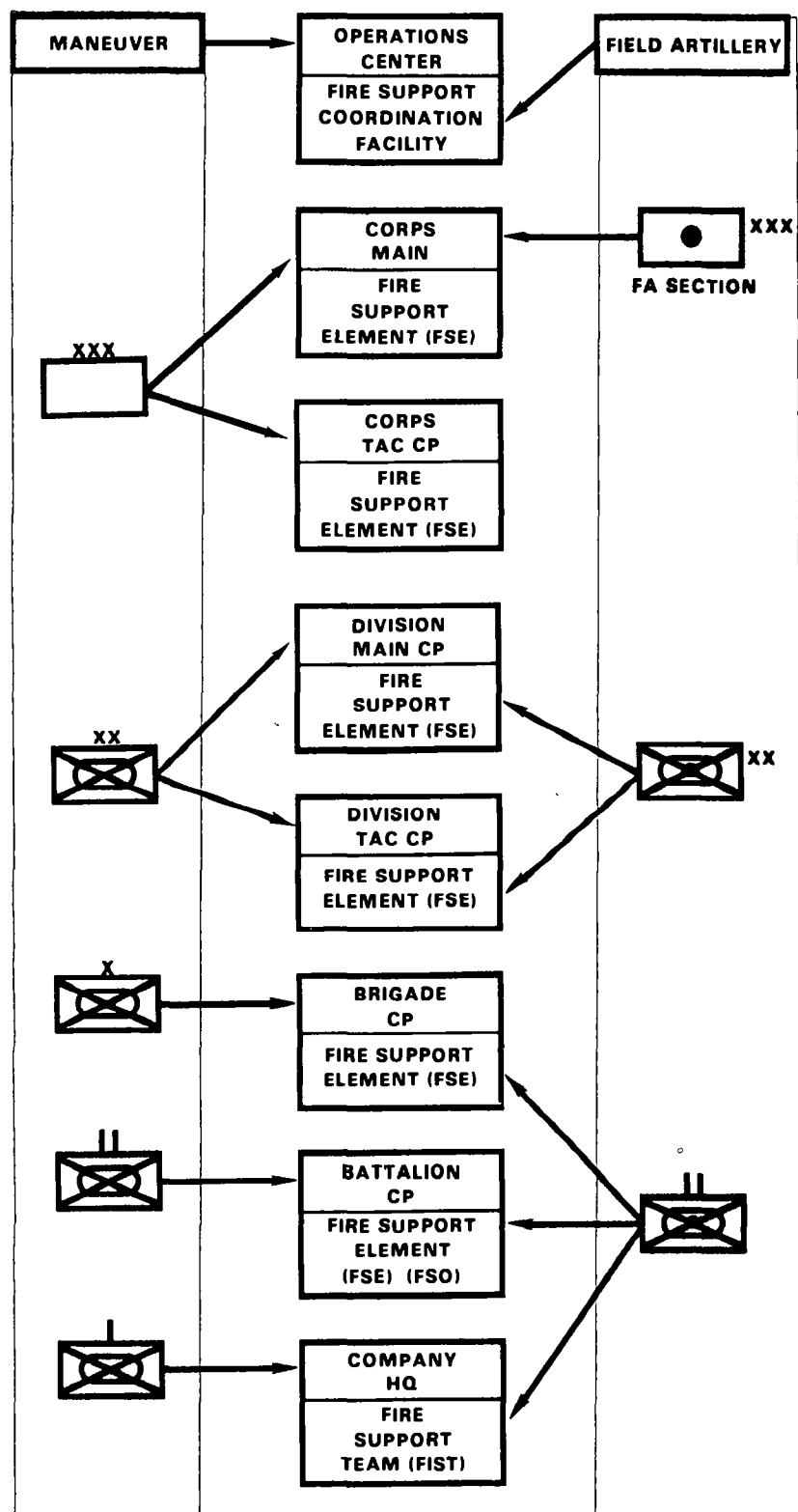


Figure I-1. Fire support coordination facilities.

I-2. Corps FSE

A fire support element is operated at both the corps tactical and main CPs. At the tactical CP, the FSE is very lean.

At the corps tactical operations center the fires branch represents a functional grouping of air defense, aviation, field artillery, chemical, EW, and tactical air support representatives. It is concerned with fire support, airspace management (aviation and air defense), and EW functions within one branch. The FSE is part of this fires branch.

The FSE is manned with personnel from the corps FA section, HHC, Corps, and is the facility which plans and coordinates fires at the corps level. The FSE works with the fire support element of the division, the senior assistant FSCoord is responsible for the functioning of the FSE and is the full-time coordinator at the facility. Intelligence representatives work in the corps FSE and in the corps CEWI facility to acquire and process targeting information for fire support operations. Target analysts work on planning and coordinating nuclear packages and toxic chemical fires. They also function as assistant FSCoords for the continuous operations of the main FSE.

I-3. Division FSE s

There are two FSE s at division, one at the division MAIN CP and one at the division TAC CP. The TAC FSE concentrates on the commander's needs for *immediate or near immediate fires*; the MAIN FSE is concerned with *formal fire planning*. The AFSCoord is responsible for the planning and coordination of fires at both FSE s. He rotates between them, stationing himself where the situation dictates. Target analysts and artillery intelligence officers are available in the MAIN FSE. The two FSE s coordinate closely with each other and with the division artillery TOC. FSE s are normally delegated

the authority to override the fire support requests of subordinate fire support facilities. In each FSE, there are representatives of the other fire support means (CAS, NGF, etc.) who advise the FSCoord on the use of their assets.

I-4. Brigade FSE

The fire support element in the brigade CP is operated by the fire support officer (FSO) from the DS FA battalion. The brigade FSE works closely with the FDC of the DS battalion, with the FSE s at maneuver battalion, and with the division MAIN and TAC FSE s. The FSO, brigade S3 air, and representatives of the other fire support means are collocated within the brigade FSE. The brigade FSE is involved in the planning and coordination of all fire support for the brigade.

I-5. Battalion FSE

The FSE at each of the maneuver battalions is also supervised by an FSO from the DS FA battalion. The FSO, battalion S3 air, mortar representative, and advisers from the other fire support means are collocated within the battalion FSE for the planning and coordination of fire support. The battalion FSE coordinates and works closely with the brigade FSE s, the FSE s of other battalions, the DS FA battalion FDC, and FIST s at company level. The FSO supervises the operations of the FIST s.

I-6. Company FIST

The FIST and its integral FO sections provide the fire support planning and coordination required by the company; the FIST s are provided by the DS FA battalion.

Occasionally, spotter teams for naval gunfire (NGF) and forward air controllers (FAC) for close air support (CAS) will collocate at the company to advise and assist in the use of their assets. The FIST is supervised by an FA lieutenant who is the primary FO for the company and who also serves as the commander's FSCOORD. By careful management and effective use of his team personnel, the FIST chief plans and coordinates the fire support for the company with no degradation of his habitual role as the FO. In this manual, the FIST chief is discussed in his role as the FSCOORD. For a complete discussion of the FIST chief as an FO see FM 6-30, *The Field Artillery Observer*, and TC 6-20-10, *The Fire Support Team (FIST)*.

1-7. Advisers

At each echelon, the FSCOORD and his fire support element personnel are advised in the use of the various fire support means by representatives of these means. At maneuver battalion and higher, advisers are available to the FSCOORD as depicted in figure I-2 and discussed below.

□ *FA fires.* FSCOORDs usually deal directly with an FA fire direction center (FDC/TOC), which advises on the status of FA support available.

□ *Tank fires.* When tanks are used as an indirect fire means, information on the status of these fires is available from the host FA FDC and the tank liaison representative collocated there.

□ *Mortar fires.* When heavy mortar fires are used in overall fire support operations, a liaison representative from the heavy mortars collocates within the FSE at maneuver battalion and advises on the capabilities and limitations of his mortars.

□ *ADA fires.* If Nike Hercules or Vulcan attacks surface targets with indirect fires, an LO is stationed at appropriate fire support facilities to advise on the best use for these fires.

□ *CAS fires.* Advice on uses for CAS fires comes from representatives of the support air force Tactical Air Control Parties (TACP) and from the force S3/G3 representative responsible for CAS.

□ *Attack helicopters.* When these fires are

- BN ONLY
- BN TO CORPS
- BN AND BDE
- - BN TO DIV

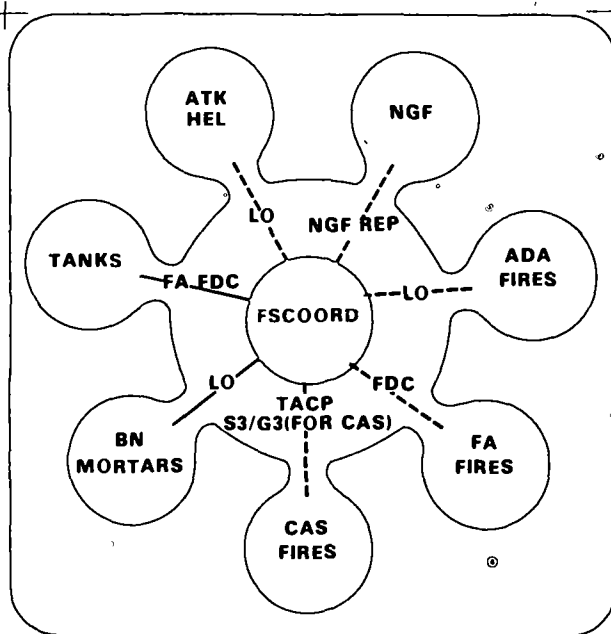


Figure I-2. Fire support advisers.

used in the overall fire support effort, LO's are provided to the supported force to advise on capabilities and limitations of this auxiliary means of fire support.

□ *NGF ships.* The Navy provides naval gunfire advisers to battalions, brigades, and divisions being supported by NGF. These personnel have communications linking them with supporting ships.

I-8. Communications

Good communications between supporting and supported elements of an Army force are essential if the planning and coordination of fire support is to work. Often, incompatibility of Army radios with those of supporting systems of other Services is encountered. This is overcome when these supporting elements place representatives with the proper radios at supported CP's.

I-9. Location

By collocating these facilities with the maneuver commander's operations center,

the FSCoord insures that the fire support planning and coordination process is integrated into battle planning and execution. All personnel in the facilities remain abreast of the tactical situation, and the planning and coordination of fires occur as a continuous cycle during the operation. The remainder of this appendix will discuss planning and coordination separately although the two occur simultaneously.

Section II. FIRE SUPPORT PLANNING

I-10. Sequence

a. Fire support planning starts when the force commander receives his mission and is an integral part of the commander's planning and decisionmaking process (fig I-3). Planning is a continuous process that does not stop until the force mission is accomplished. The goal of fire support planning is to determine *how* to integrate fire support with the scheme of maneuver to gain the maximum combat power for the commander.

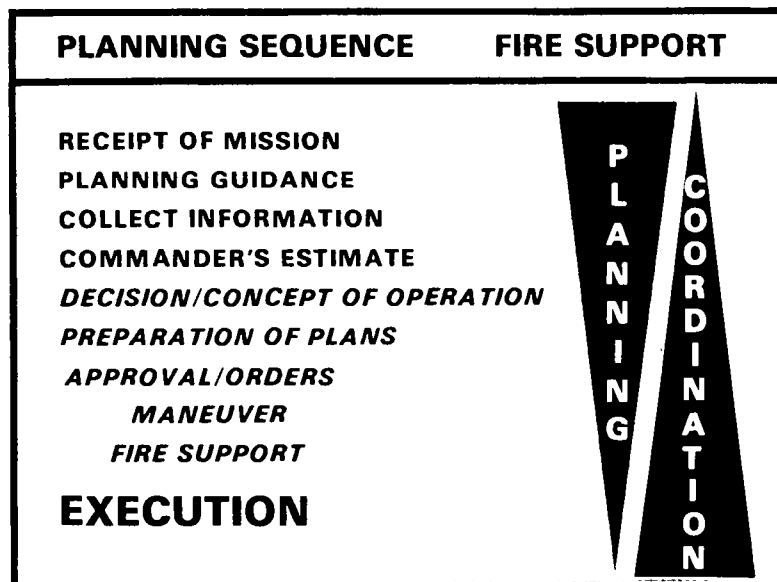


Figure I-3. Fire support planning and coordination concept.

b. The depth of fire support planning and the procedures used are a function of the *echelon* at which the planning is done and the *time* available.

Regardless of the echelon and time available, the FSCoord's planning process is guided by principles of fire support planning.

I-11. Principles

These principles are the framework of a mental process the FSCoord uses to insure the optimum use of fire support.

a. Start planning early and plan continuously.

To effectively integrate fire support with maneuver, planning *must* begin when the commander states his mission, and it accelerates as the commander's planning sequence unfolds (fig I-3). Planning is continuous and must keep pace with the dynamics of the battle; it *must not* stagnate.

b. Exploit all available targeting assets.

The FSCoord must insure that target information from *all* sources available at his echelon is rapidly evaluated and routed to the appropriate fire support delivery agency.

c. Consider the use of all available fire support means.

The FSCoord must think total assets and not be constrained to a particular fire support means. His knowledge of the available means is the key to efficient employment.

d. Select the most effective means.

This principle is a product of the FSCoord's consideration of all available means. Based on target analysis, weapon characteristics, the mission, and the commander's guidance, the FSCoord selects and recommends the most effective fire support means for each mission.

e. Provide adequate fire support.

The mission of the force and the commander's guidance determine the amount and type fire support needed. The FSCoord recommends and the force

commander approves the fire support allocation that will best accomplish the mission.

f. Avoid unnecessary duplication.

The fires planned against a target must be adequate, but must not exceed that needed to produce the desired effect. The fact that more than one unit or more than one fire support means attacks a single target is not in itself *unnecessary* duplication.

g. Provide for flexibility.

The FSCoord must anticipate and provide for the unexpected that inevitably occurs in battle. On-order missions, judicious allocation of assets, nonstandard tactical missions, and the careful positioning of fire support means provide flexibility for the commander to respond to the changing battle.

h. Provide for the safeguarding and survivability of friendly forces and installations.

Several measures will accomplish this principle: an active counterfire program, use of coordinating measures, restricted firing postures to eliminate signatures, and the consideration of friendly forces in target analysis. In implementing this principle, safety measures must not become so restrictive that they unduly degrade fire support.

I-12. Priorities

The principles are designed to gain the optimum fire support to apply against the competing demands for that fire support. The demands may exceed the capability of the fire support system, so the commander must establish priorities to counter those targets that are most dangerous to his mission. The commander's guidance and the priorities he establishes channel the FSCoord in the planning of targets for attack. The priorities are not fixed but are changed to meet new situations and new threats. The commander's priorities are reflected in his

allocation of assets, positioning of weapons, assignment of missions, programs of fires, and the target lists derived from planning. These priorities are valid for the situations and the echelons for which they are established.

I-13. Categories

Fire support planning may be *formal* or *informal* based on the echelon at which the planning occurs and the time available.

a. *Formal planning* is a deliberate process that essentially flows from the *higher echelons to the lower* (fig I-4). Formal planning involves a detailed consideration of what fire support is available, how to obtain it, and how maneuver and fire support are to be integrated. This type of planning deals with specific operations and, at brigade and higher levels, normally results in a written fire support plan that is disseminated from higher to lower headquarters as part of the commander's OPORD.

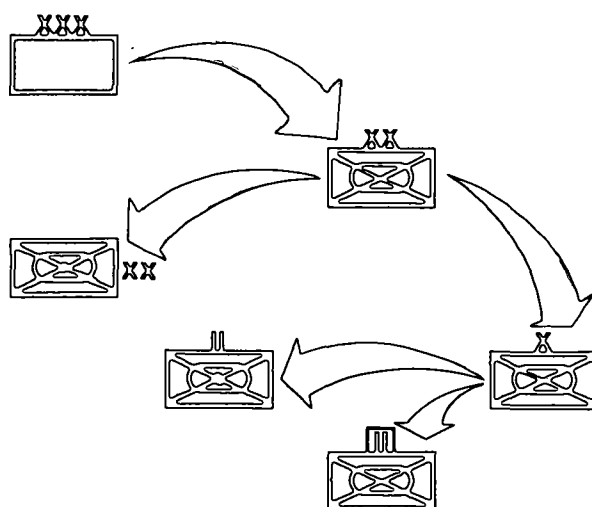


Figure I-4. Formal fire support planning.

b. *Informal planning* is a far more dynamic process that responds to the *immediate* problems on the battlefield. Generally, it flows from *lower to higher* echelons (fig I-5) and is done primarily at the maneuver company and battalion. Informal planning—like formal planning—is a product of the time available and the echelon for which it is devised. Because it is a spontaneous process tied to the immediate situation in battle, informal planning will normally be done orally rather than in writing. The *purpose* of informal planning is the same as that of formal planning: to optimize the *commander's combat power*.

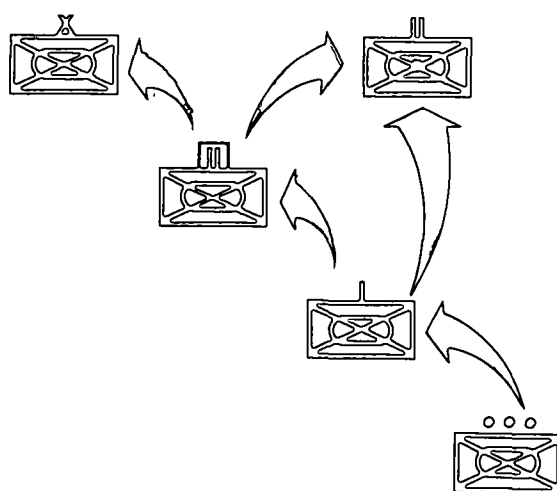


Figure I-5. Informal fire support planning.

Section III. FORMAL FIRE SUPPORT PLANNING

I-14. Planning Responsibilities

The FSCoord is the commander's fire support planner; he works in close coordination with the commander's primary staff—especially the operations officer, G3/S3—and with the other members of the fire support facility. The planning functions and responsibilities of the facilities involved in formal fire support planning are discussed in the following paragraphs.

a. Corps FSE.

The corps FSE plans the use of fire support for the corps as a whole and plans the fires of those fire support means retained under control of the corps commander. These means may include CAS and NGF as well as Lance and Pershing. If Nike Hercules missiles are used in the surface-to-surface role, their fires are planned at the corps FSE. The FSE receives targeting information from the corps all-source intelligence center (i.e., the electronic warfare intelligence operations center-EWIOC), the division, and other corps maneuver elements. Fires are planned on all targets of interest to the corps as well as those that are beyond the capability of the divisions. The corps FSE tasks the FSEs at the division MAIN CPs through corps plans and orders.

The major effort of the corps FSE is devoted to the planning and coordinating of nuclear and chemical weapons operations within the authority granted by the corps commander. This is done in conjunction with the division MAIN FSEs. Chapter 6 of this manual and paragraphs I-21 and I-22 of this appendix discuss nuclear and chemical planning in detail.

b. Division MAIN FSE.

The division MAIN FSE exchanges target information with intelligence agencies and other fire support facilities (e.g., division all-source intelligence center, division artillery

TOC, corps FSE) to develop targets to be fired by division assets or passed to higher or lower echelons. The MAIN FSE approves targets planned by the brigade FSEs for engagement by fire support means other than FA that are outside of brigade assets; requests for additional FA fires are processed through FA fire direction channels. Duplications are resolved. The MAIN FSE is not engaged in the immediate battle as is the TAC FSE, and normally plans fire support for future operations. Through plans and orders, the MAIN FSE tasks the division artillery and all other fire support means under division control (CAS, NGF, etc.) to provide fire support. The plans developed by the MAIN FSE are a part of the division's operations plans and orders.

The MAIN FSE is also deeply involved in nuclear and chemical weapons planning. It plans the division nuclear subpackages which are sent to the corps FSE for inclusion in the corps package. MAIN also plans chemical fire support, prepares the nuclear and chemical fire plans, and tasks subordinate units to deliver nuclear and chemical fires.

The FSE at the division TAC CP is concerned with current operations and immediate needs. The TAC FSE is primarily a coordinating facility and does not normally conduct formal fire planning. TAC FSE can request the MAIN FSE to plan targets for future operations.

c. Brigade FSE.

The brigade commander is primarily concerned with targets critical to the brigade operation. It is the responsibility of the FSCoord to insure that fire support capabilities are an integral part of the commander's planning and decisionmaking process. The brigade FSE consolidates fire support planning requests from the battalion FSEs, resolves duplications, adds brigade targets, and—in conjunction with the brigade S3—recommends these targets be included in the fire support plan. This forms the basis for the fire support plan.

The FSCoord then directs the personnel in the brigade FSE, including representatives from other fire support systems, to develop a coordinated fire support plan that will meet the fire support needs of the brigade for the operation. The resulting brigade fire support plan is part of the brigade OPLAN/OPORD and tasks subordinate and supporting fire support systems. The brigade FSE keeps the DS battalion, subordinate FSEs, and representatives of the other means informed of changes to brigade plan.

The remainder of this section discusses this plan—how it is prepared, who it is disseminated to, and who is responsible for this action.

I-15. Preparation of the Fire Support Plan

a. The commander's selected course of action, his concept of the operation, and all guidance given during the planning process form the basis for the development of the OPORD. Paragraph 3 of the OPORD outlines *how* the commander wants to use his fire and maneuver assets and includes the fire support plan (fig I-6). Tab A of this appendix depicts a sample division OPORD with its fire support plan.

b. The FSCoord prepares the *fires* portion of the concept of operation and coordinates the preparation of the *fire support subparagraph*, which constitutes the fire support plan. The fire support plan includes a subparagraph for each fire support agency involved in the operation. Input for these subparagraphs comes to the FSCoord from the appropriate fire support representatives within the FSEs (fig I-7). If the fire support plan requires amplification, a fire support annex is prepared. Tab B of this appendix depicts a sample division OPORD in which paragraph 3 is amplified by a fire support annex.

c. The fire support plan for a given force

headquarters will not be dependent on target input from subordinate elements. Instead it will tell subordinate commanders what they are to do and what they need to know to accomplish their missions. The plan should not address items contained in the SOP and should not include "how to implement" instructions to individual fire support agencies; e.g., instructions to the FA on how to attack a particular target. Information

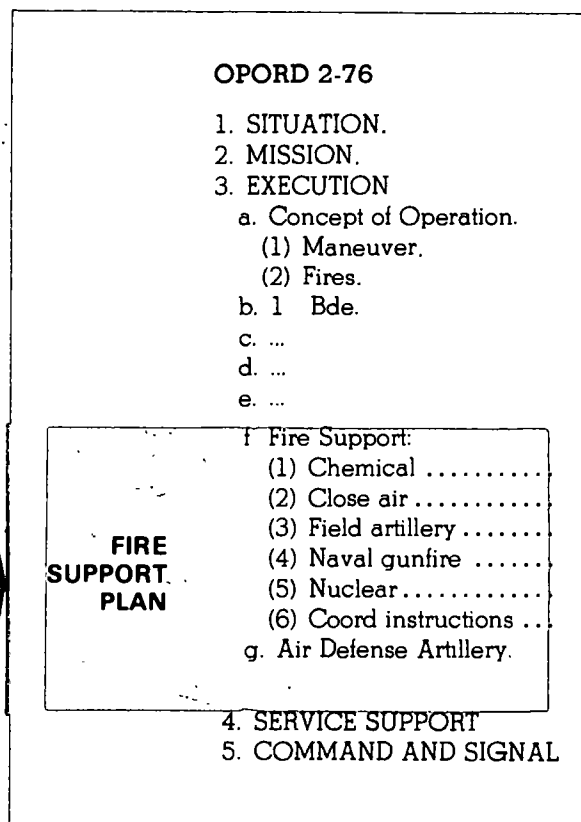


Figure I-6. OPORD and fire support plan.

peculiar to each fire support means should be addressed in its SOPs or in implementing instructions subsequent to receipt of the fire support plan. This can be accomplished through the publication of separate support plans; e.g., FA, NGF, and CAS, are prepared by the representative of each agency and are disseminated through the agency's channels (figs I-7 and I-8).

LEVEL	AGENCY	INDIVIDUAL RESPONSIBLE	FA Support Plan	Fire Support Annex	FA Support Plan	CAS Plan	NGF Plan	Nuclear Spt Plan	Chemical Spt Plan
Corps	MAIN FSE	FSCoord*	■	■			■	■	
	NBCE	Chemical Officer							■
	Opns Elm of Corps FA Sec	FA Operations Officer			■				
	TASE	G3 Air**				■			
Division		FSCoord*	■	■				■	
		Asst G3 (For CAS)**				■			
	MAIN FSE	Naval Gunfire Officer (NGFO)					■		
	Div Arty TOC	Div Arty S3							
	NBCE	Chemical Officer							■
Brigade		FSCoord***	■	■					
		S3 Air**				■			
	FSE	Naval Gunfire Liaison Officer (NGLO)					■		
		Chemical Officer							■
	DS FA Bn FDC	DS Bn S3			■				
*Normally accomplished by assistant FSCoord. **Assisted by USAF representative. ***Normally accomplished by the FSO.									

Figure I-7. Formal fire planning responsibilities.

OPORD

1. SITUATION...
2. MISSION...
3. EXECUTION
 - a. Concept of Operation.
 - (1) Maneuver...
 - (2) Fires...
 - b. 1st Bde.
 - c. 2d Bde.
 - d. 3d Bde.
 - e. Fire Support:
 - (1) Chemical
 - (2) Close air
 - (3) Field artillery
 - (4) Naval gunfire
 - (5) Nuclear
 - (6) Coord instructions ...
 - f. Air Defense Artillery.
4. SERVICE SUPPORT...
5. COMMAND AND SIGNAL...

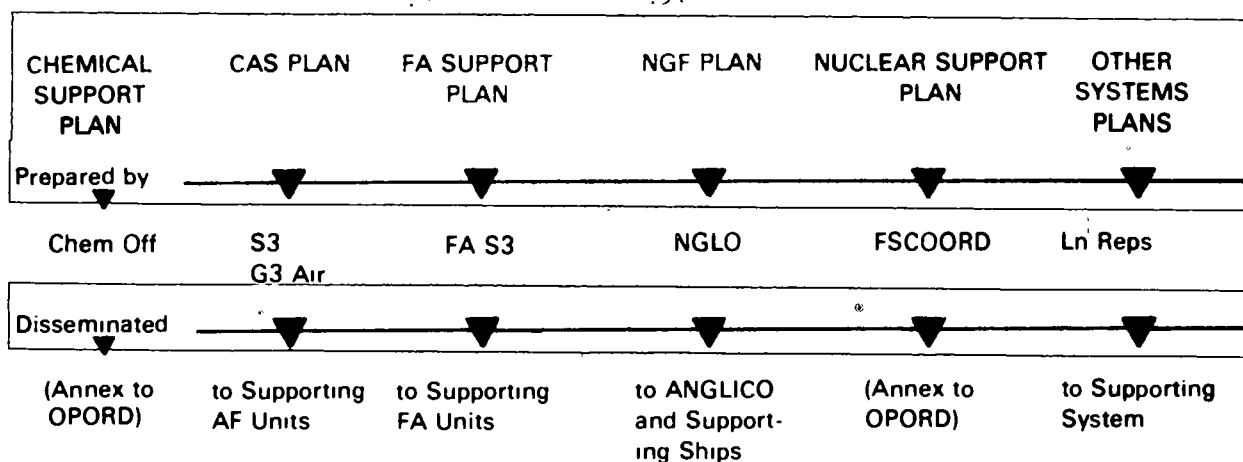
Prepared by
FSCoordFIRE
SUPPORT
ANNEX
(If required)PLANS FOR
INDIVIDUAL
FIRE SUPPORT
MEANS

Figure I-8. Fire support plan.

d. An illustration of a fire support plan for a division defensive operation is shown below. This example is a plan which is in paragraph 3 of the OPOD and requires no amplification in an annex.

2. MISSION ***

3. EXECUTION ***

a. Concept of Operation.

(1) Maneuver

(2) Fires

b. 1 Bde

c.

d.

e. Fire Support.

(1) Chemical.

(a) General: Toxic chemicals may be planned for use within the CFA and MBA. Release for use will be transmitted per SOP (Annex E — Chemical Support Plan).

(b) PCL: As directed by 1 Corps LOI dated 20 Apr

(2) Close Air Support.

(a) General:

1. 180 air sorties daily are available to

1 Corps.

2. 76 air sorties distributed for planning purposes to 53 Mech Div.

3. Priority of employment to elements in the CFA, MBA, and counterfire targets in that order.

(b) Distribution for Planning Purposes:

1 12 sorties daily to 1 Bde.

2. 32 sorties daily to 2 Bde.

3 12 sorties daily to 3 Bde.

(c) Special Instructions:

1 Four sorties per mission for planning purposes

2 Missions short of FSCL must be controlled by a FAC and/or an air support team.

3. Air support radar teams Scarecrow and Packrat available through FSE.

(1) This paragraph has two parts—General and PCL.

(a) General: Commander's guidance on employment of chemical fires, planning requirements and any restrictions and general considerations. Include a reference to the Chemical Support Plan.

(b) PCL: Indicate the weapons caliber and type to be carried by each delivery unit. If the PCL is established by a command directive or SOP, refer to that document.

(2) This paragraph is divided into three subparagraphs—General, Distribution, and Special Instructions.

(a) General: Give general information concerning close air support available to higher headquarters and the commander's desires on use. Give allocation by higher headquarters.

(b) Distributions: Give planning distributions to subordinate units.

(c) Special Instructions: Give miscellaneous coordinating instructions and information concerning close air support when not covered by SOP.

(3) Field Artillery

(a) General

1. Priority of fires to 2 Bde

2 Counterfire priorities: enemy mortars and field artillery affecting MBA units, then nuclear capable fire systems.

(b) Organization for Combat:

1 Div Arty

1-40 FA (-) (155-mm, SP) DS 1 Bde,
atch one btry to 2-635 FA, detached upon withdrawal
of covering force

1-41 FA (155-mm, SP) DS 2a Bde

1-42 FA (-) (155-mm, SP) DS 3 Bde,
atch one btry to 2-635 FA, detached upon withdrawal
of covering force

1-43 FA (8-in, SP) R 1-41 FA

2-611 FA (-) (8-in, SP) Atch TF 23 Cav,
detached upon withdrawal of covering force.
GSR 1-42 FA

2-635 FA (+) (155-mm, SP) Atch TF 23
Cav, detached upon withdrawal of covering force;
Reinf 1-41 FA

Btry E (TA) 26 FA GS

2. Reinf FA.

61 FA Bde

2-631 FA (155-mm, SP)

2-606 FA (8-in, SP)

2-607 FA (8-in, SP)

2-661 FA (175-mm, SP)

(c) Special Instructions:

1. 2-611 FA do not exceed 50 percent CSR
in Reinf 1-42 FA

2 Deceptive fires across division
boundaries will be cleared by FSE

3 Firing batteries of DS FA units in MBA
remain in a silent status until covering force
withdraws through PL Black.

4 2-631 FA will provide two FPF's to 1
Bde as required.

5 CSR: 232400 — 252400 May.

(3) This paragraph is divided into three subparagraphs—General, Organization for Combat, and Special Instructions:

(a) General: State commander's guidance on FA employment. Information concerning priority of fires, counterfire.

Preparation or counterpreparations should be included as appropriate.

(b) Organization for Combat: Give organization for combat of FA units organic or attached to the command. A mission must be assigned to each. List FA brigades attached to the command and show elements thereof. List units in numerical order. Batteries assigned a separate tactical mission under direct supervision of the command are listed in alphabetical sequence immediately following the parent battalion. List those units that have a mission of reinforcing.

(Those units that are GSR to the DIV ARTY will be indicated in paragraph 1b, situation—friendly forces.)

(c) Special Instructions: Give miscellaneous instructions that affect more than one FA unit such as: revisions of missions, instructions on planning of fires, position areas, and zones of fire.

	HE	ICM(AP)	ICM(DP)	WP	ILLUM
155-mm	60	30	25	10	10
8-in	80	20	10		
175-mm	65				

(4) Naval Gunfire.

(a) General: Priority of fires to armor targets of more than five vehicles and counterfire targets in that order.

(b) Allocation of Naval Gunfire Support:

CA78 (Cruiser): GS 2 Bde

CA73 (Cruiser): GS 3 Bde

DD856 (Destroyer): DS TF 1-25

(c) Special Instructions: Units not having a NGF spot team can obtain NGF support through their battalion/brigade FSE.

(5) Nuclear.

(a) General: Division will plan subpackages for corps contingencies A, B, and C. Annex D (Nuclear Support Plan) provides planning guidance.

(b) PNL:

Unit	155-mm		8-in	
	0.1KT	0.5KT	0.5KT	5.0KT
1-40 FA	3	2		
1-41 FA	4	4		
1-42 FA	2	3		
1-43 FA			5	5
2-611 FA			5	5

(6) Coordinating Instructions.

(a) Fire Planning and Control:

1. 1 Corps FSCL is BLUE RIVER, Eff 230600 May.

2. Division CFL from DY300600 to DY365600 to DY450585, Eff 232400 May.

(b) Safety:

1. Emergency cancellation of fire in clear text. Fires will be resumed upon failure to authenticate.

2. Two hour notification required by 1 Corps to change FSCL.

(4) This paragraph is divided into three subparagraphs—General, Allocation of Naval Gunfire Support, and Special Instructions.

(a) General: State commander's guidance on the employment of naval gunfire.

(b) Allocation of Naval Gunfire Support: Give mission statements for all ships providing support.

(c) Special Instructions: List any instructions or restrictions that may deviate from existing SOPs.

(5) The nuclear paragraph has two parts—General and PNL.

(a) General: State commander's guidance on employment of nuclear fires, planning requirements, and constraints. Include a reference to the Nuclear Support Plan.

(b) PNL: Indicate the weapons by caliber and yield to be carried by each delivery unit. If the PNL is established by a command directive or SOP, refer to that document.

(6) This is the last subparagraph in the FIRE SUPPORT paragraph. Its actual designation depends on the number of fire support agencies available to the command. This subparagraph contains instructions applicable to two or more fire support means, such as coordinating measures in effect and safety measures.

I-16. Fire Support Plan Dissemination

After the fire support plan is prepared, it is disseminated as a part of the force OPOD as shown in figure I-9.

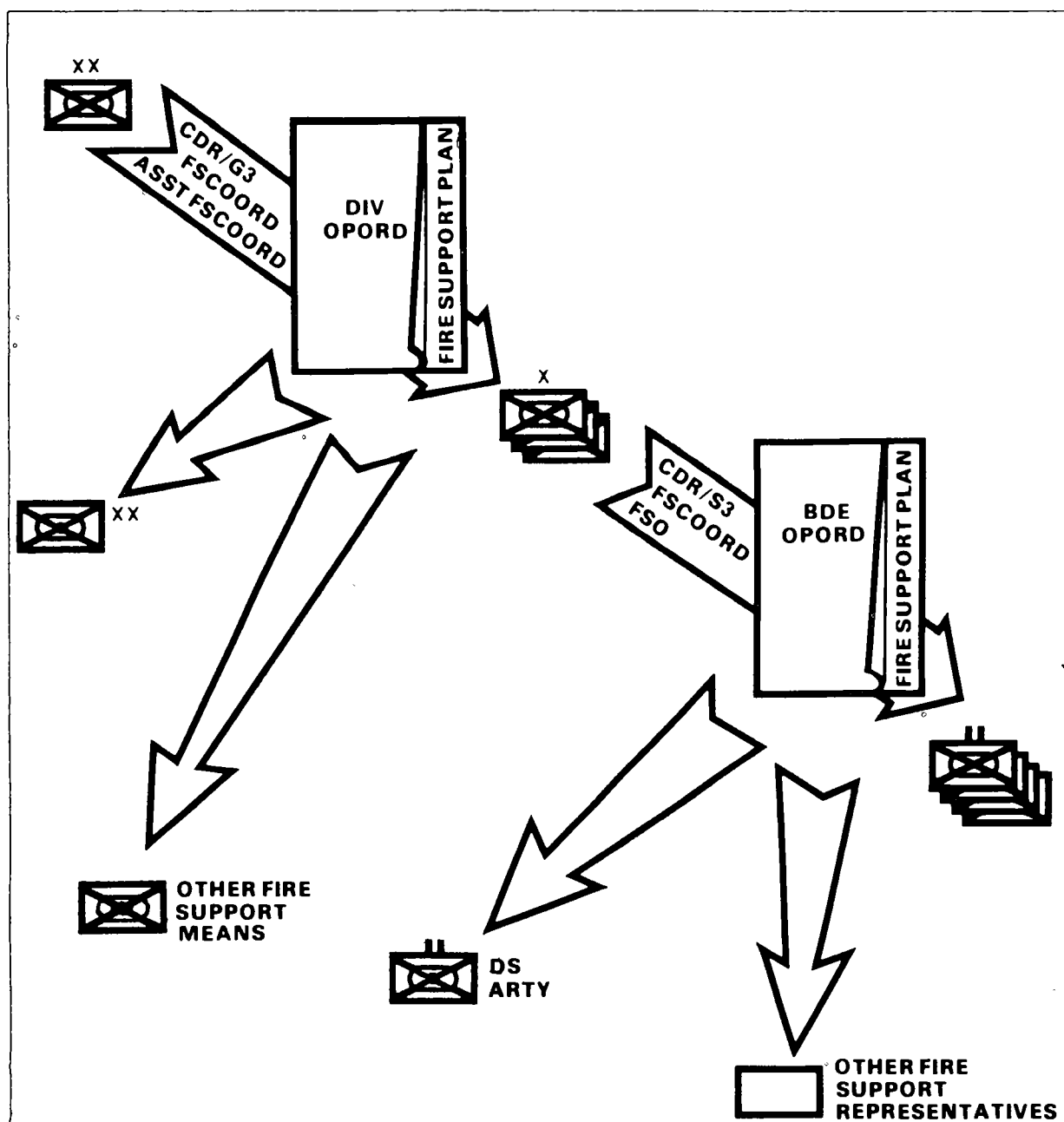


Figure I-9. Fire support plan dissemination.

I-17. Fire Support Annex

a. At the higher echelons, the fire support plan may be so extensive that it cannot reasonably be placed in the body of the OPORD. Or, at any echelon, the force operations officer (who is responsible for preparing the OPORD) may direct a limited input to paragraph 3. In either case, a *fire support annex* to the OPORD may be published. The fire support annex amplifies the information in paragraph 3.

b. The need for this more extensive document must be carefully weighed by the operations officer and FSCoord. If the fire support plan in paragraph 3 provides the necessary information, the fire support annex *should not* be published. A sample division fire support annex is at tab C of this appendix.

I-18. Field Artillery Support Plan

The FA support plan is the force artillery commander's tactical plan for employing the fires of all available supporting artillery. The FA operations officer (S3) prepares the FA support plan based on guidance, targets, and instructions included in the fire support plan of the OPORD (fig I-8) or by verbal information from the FSE. The FA support plan insures the most efficient use of available FA to support the maneuver forces and disseminates the FA commander's guidance on how to accomplish the FA portion of the fire support plan. This guidance may include designation of specific units to attack critical targets that are a threat to the accomplishment of the mission of the supported commander and the manner in which the supporting FA will engage the target. Because of the fluidity of the battle, the written FA support plan may follow the oral dissemination of those key elements needed by the units for timely execution. When completed, an FA support plan will

contain a written portion, a target list, and the fire support schedules. An example of an FA support plan is at tab D of this appendix.

a. Procedure for Preparing FA Support Plan.

The procedure for preparing an FA support plan given in (1) through (8) below applies to division artillery TOC s and DS FA battalion fire direction centers.

(1) List the targets received from the planning sources on the target list worksheet and annotate the work columns to reflect the required method of attack; e.g., preparation, counterpreparation, groups, series, and programs.

(2) Plot targets on the target overlay and designate other targets as appropriate.

(3) Resolve any duplication of targets.

(4) Determine the firing unit(s) to attack and the method of attack for each target.

(5) Prepare an FA scheduling worksheet for those fires that are to be scheduled; e.g., preparation fire, counterpreparation fire, series of targets, programs of targets, and groups of targets.

(6) Annotate the work column(s) on the target list worksheet to reflect the completion of the required action.

(7) Prepare the written portion.

(8) Extract pertinent data from the target list worksheet and scheduling worksheets and publish the target list and necessary fire support schedules for attachment to the written portion.

b. Target List Worksheet.

The worksheet is used to compile the targets for planning and is the source document for the target list that will be included in the FA support plan. The data on the target list worksheet aid in determining how each target will be attacked. The worksheet (fig I-10) consists of alphabetically designated columns and five work columns. The alphabetical column headings facilitate transmission of the data by electronic means. This is how the columns of the form are used:

■ **Ln No:** An administrative control measure for internal use. Each target listed is assigned a line number.

■ **Target Number (a):** Each target is assigned a target number from the block of numbers given to the planning source.

■ **Description (b):** Enter a concise target description that is adequate for a decision on how the target should be attacked.

■ **Location (c):** Enter grid coordinates for point, rectangular, and circular targets. For linear targets, enter the coordinates of the center point.

■ **Attitude (d):** Enter the attitude of linear and rectangular targets in grid azimuths.

■ **Size (e and f):** No dimensions are entered for a point target; one dimension (length—e) for a linear target; and two dimensions (length—e; width—f) for a rectangular target. The radius of a circular target is entered in column f—width.

■ **Source a/o Accuracy (g):** The information in this column aids in determining how to attack the target. When known, enter the source and accuracy of the target data.

■ **Remarks (h):** Enter any special consideration(s) for attack of the target. The target description may be amplified here.

■ **Work Columns:** These columns are used to indicate targets that are to be included in a particular fire support schedule. Enter one diagonal line (/) under the appropriate column to show the target is to be included in a particular schedule; when the

(53 DIV OPORD 20)										TARGET LIST WORKSHEET				SHEET 1 OF 1	
LN NO	TARGET NUMBER (a)	DESCRIPTION (b)	LOCATION (c)	ATTITUDE (d)	SIZE		SOURCE a/o ACCURACY (g)	REMARKS (h)	PREP	SERIES	GORG	CND			
					L (e)	W (f)									
1	DB4070	SUSP SIG CENTR	87618411			200	100 DF	GP DIY	X	X					
2	DB4083	REG T CP	836835			150	100 II	GP DIY	X	X					
3	D22176	SUSP 122-mm HOW BTRY	894790	1500	250	100	200		X						
4	DA3225	152-mm HOW BTRY	993795	1700	300	200	200	ON CALL IN PREP	X						
5	DA3232	SUSP OP	889802						X			X			
6	DC2579	122-mm HOW BTRY	906787	0700	250	100	150		X						
7	DY0031	130-mm GUN BTRY	937822	1200	300	100	150		X						
8	DB4092	SUSP OP	948812						X			X			
9	DB4108	TRENCH LINE	947775	1300	300	100	100 A0	GP D2Y	X	X					
10	DY0044	BN CP	818799			150	150 II		X						
11	DZ2181	122-mm HOW BTRY	980830	0800	250	100	200		X						
12	DZ2196	152-mm HOW BTRY	94828111	1600	300	200	100		X						
13	DZ4123	REG T CP	88071615			150	100	GP DIY	X	X					
14	DA3246	AT WPN SITE	930820			100		SERIES PAUL	X	X					
15	DA3251	TRENCH LINE	963814	1500	400	100	100 A0	SERIES PAUL GP D2Y	X	X					
16	DY0058	122-mm HOW BTRY	815819	1700	250	100	150		X						
17	DY0063	OP	986751						X			X			
18	DY0074	OP	975812						X			X			
19	DB4159	SUSP 122-mm HOW BTRY	874693	1400	200	100	100		X						

DA FORM 1 OCT 77 4655

FOR USE OF THIS FORM SEE FM 6-20. THE PROPONENT AGENCY IS THE US ARMY TRAINING AND DOCTRINE COMMAND

Figure I-10. Completed sample target list worksheet.

target has been scheduled, enter an opposing diagonal line, forming an "X" to show the action is complete.

A completed sample target list worksheet is at figure I-10.

c. Target Overlay.

The target overlay is a tool to supplement the target list worksheet and it is *not* published as part of the FA support plan. As a minimum it should include the targets to fire, units to fire, supported unit's boundaries, and any fire support coordination measures in use. The overlay will aid in:

- ☐ resolving duplications,
- ☐ evaluating adequacy of planned support

in relation to the scheme of maneuver, and

- ☐ determining the most appropriate unit to attack a given target.

d. Target List.

The target list is a part of the FA support plan and contains data on targets planned to support the operation. The data are extracted from the target list worksheet and are presented in the format shown in figure I-11.

(a)		(b)	(c)
Ln No.	Tgt No.	Description	Location
1	DB4070	Susp Sig Ctr	87618411
2	DB4080	Regt CP	83608350
3	DZ2170(a)	Susp 122-mm How Btry	894790

Remarks: (a) Altitude 1500 mls.

Figure I-11. Target list.

Each target is assigned a line number for administrative control. The remarks section is used to enter special instructions regarding individual targets. A remark entered in this section is keyed to a subscript next to the target number. The target list can be easily reproduced and disseminated.

e. Scheduling Worksheet.

The FA S3, based on commander's guidance, analyzes the information on the target worksheet and determines what schedules of fires will be needed to support the scheme of maneuver or plan of defense (e.g., counter OP program).

Any of the following schedules may be prepared depending on the tactical situation:

- ☐ Groups
- ☐ Series
- ☐ Programs
- ☐ Preparation fires
- ☐ Counterpreparation fires
- ☐ Illumination fires
- ☐ Harassing fires
- ☐ Interdiction fires
- ☐ Smoke

The scheduling worksheet is the fire support planner's tool for organizing targets into specific schedules. A separate worksheet is constructed for each schedule planned to support the operation. Some general procedures used in *most* schedules are shown in figure I-12.

FOLDOUT

f. Instructions for Specific Schedules.

(1) *Preparation (fig I-12).* A preparation is a schedule fired in three phases in relation to an H-hour. The preparation must begin and end firing with all fire units that are used in the preparation.

No gaps (i.e., two or more consecutive shift times) in scheduling should occur. Shift time is the time from when a cannon unit ceases firing on one target until the unit is able to begin firing on another target. Shift time is affected by many variables (e.g., state of training, amount of shift, type of munition to be fired, etc.). For planning and scheduling purposes, a shift time of 1 minute is established for light and medium (105-mm and 155-mm) artillery and a shift time of 2 minutes is established for heavy (8-in and 175-mm) artillery. All units should be capable of shifting in less time than the established figures.

Any gaps which do occur should be "filled" by refiring phase one targets. Units should have commenced firing on the last targets in one phase before or at the same time that they begin firing on targets in the next phase. However, this may not always be possible because some weapons may not have adequate range to fire at targets in all phases. In that case, the weapons are scheduled into the phase that is within their capability rather than being excluded altogether from the preparation.

(2) *Counterpreparation.* The counterpreparation, like the preparation in figure I-12, is also fired in phases (2) with firing beginning and ending with all units participating and no gaps permitted. Firing should have begun on the last targets of one phase before or at the same time that firing commences on the first targets of the succeeding phase.

(3) *Groups.* This schedule is normally fired on call and is not scheduled against a time sequence. Rather it is scheduled so that fires will strike the targets at the same time. The group number is shown on the top line of the scheduling worksheet (fig I-13). Below the

(GROUPS for 53 Div OPORD 20) SCHEDULING WORKSHEET						
LINE NO	ORGANIZATION AND CALIBER	FIRING UNITS	(D1Y)		(D2Y)	
						REMARKS
1	3-42FA	A	DB 4074 18(a)	DB 4108 36(a)		
2	(155 SP)	B	DB 4083 24(a)	DA 3251 36(a)		
3		C	DZ 4123 24(a)			
						(a) 50% VT

Figure I-13. Sample groups of fires.

group number, list the targets of the group opposite the firing unit assigned the target. Below each target number, show the number of rounds to be fired. No line or dot is drawn between the target number and the ammunition entry.

More than one group for a given operation

may be scheduled on the same scheduling worksheet.

(4) *Programs.* Programs are fired on call at the commander's request. Each type program is scheduled starting at 0 and extending as long as needed (fig I-14).

(Counter OP Program for 53 Div) OPORD 20 SCHEDULING WORKSHEET						
LINE NO	ORGANIZATION AND CALIBER	FIRING UNITS				
			0	1	2	3
1	3-42FA	A			DA 3232	DY 0074
					24 (a)	6 (a)
2	(155 SP)	B			DB 4092	DY 0074
					24 (a)	6 (a)
3		C			DY 0063	DY 0074
					24 (a)	6 (a)
						(a) 50% SMK

Figure I-14. Sample counter OP program.

(5) *Series*. Normally, the commander requesting a series will indicate the sequence in which he wants the targets attacked. Scheduling is then accomplished according

to this guidance. If there is no guidance, the FA S3 will schedule the fires in the order he determines will best support the scheme of maneuver. The series is normally fired on call

(SERIES PAUL FOR 53 rd DIV OPORD 20) SCHEDULING WORKSHEET										
LINE NO	ORGANIZATION AND CALIBER	FIRING UNITS							REMARKS	
			0	1	2	3	4	5		6
1	3-42FA	A	DA 3251	DA 3246						
			18(a)	6(b)						
2	(155 SP)	B	DA 3251	DA 3246						
			18(a)	6(b)						
3		C	DA 3251	DA 3246						
			18(a)	6(b)						
										(a) 50% VT
										(b) 50% SMK

Figure I-15. Sample series schedule.

and is scheduled starting at 0 (fig I-15).

(6) *Illumination/Smoke*. For targets with a specified duration of fire but for which the ammunition requirements are unknown; e.g., smoke and illumination targets where the expenditures are affected by wind speed and direction (fig I-16):

- Indicate by a horizontal line the TOT and

duration of fire.

- Place the target number above this line.
- Below the line, center a subscript keyed to a remark that shows the method of engagement; e.g., 2-gun illumination, lateral or range spread, first rounds WP and HC—succeeding rounds HC, etc.
- When scheduling smoke, back off 1 minute to allow for buildup time.

(SMOKE for 53 - Div O_{PO}RD 20) SCHEDULING WORKSHEET

LINE NO	ORGANIZATION AND CALIBER	FIRING UNITS											REMARKS
			0	1	2	3	4	5					
1	3-42FA	A		DA 3246									(a) 13 RNDs WP & HC, Succeeding
				(a)									
2	(155 SP)	B		DB 4092									RNDs HC
				(a)									

(ILLUMINATION for 53 - Div O_{PO}RD 20) SCHEDULING WORKSHEET

LINE NO	ORGANIZATION AND CALIBER	FIRING UNITS											REMARKS
			0	1	2	3	4	5					
1	3-42FA	A		DA 3251									(a) 4 GUN ILLUM
				(a)									
2	(155 SP)	B		DB 4108									(b) 2 GUN LATERAL SPREAD
				(b)									

Buildup time is not included. This is a 5-minute schedule—not a 4-minute with 1-minute buildup.

Figure I-16. Sample illum/smoke schedule.

g. Schedule.

(1) The schedule is a part of the FA support plan and contains data extracted from the scheduling worksheet. A separate

schedule is included in the plan for each type schedule of fires planned. The schedule format is shown in figure I-17.

ANNEX B (PREPARATION SCHEDULE) TO FIRE SUPPORT PLAN TO OPORD 20

LN NO.	(a) UNIT	(b) TGT	(c) ROUNDS	(d) TOT
1	A/1-123	DZ2170	18 (a)	H-5
		DZ2180	18 (a)	H-2
		DY0050	12 (a)	H+1

Remarks: (a) ICM

Figure I-17. Sample schedule.

(2) The heading will include the OPORD/OPLAN being supported and the schedule name (Preparation Schedule, Series PAUL, etc.). The standard shell/fuze combination is HE/Q unless specified differently by a remark. The TOT column indicates the time on target of the initial rounds. Subsequent rounds are fired at the sustained rate of fire for the designated weapon.

(3) If the designated unit will not be able to fire the number of rounds shown in the time period allowed, the commander must notify the FA headquarters that issued the schedule.

(4) If a fire unit is called out of engagement of an FA support schedule, it reenters the schedule based on present time rather than the next target to be engaged (e.g., a unit firing a preparation is diverted to a target of opportunity at H-5 minutes and takes 4 minutes to attack the target of opportunity. The unit reenters the preparation at H-1.)

h. Written Portion.

In the FA support plan, the written portion is the basic document. It follows the five-paragraph field order format and includes the information necessary to understand the plan and other special information on the employment of FA fires in support of the operation or any phase of the operation. The heading of the plan indicates the FA headquarters publishing the plan. A security classification, map reference, and time zone will be shown. The ending of the original copy will bear the signature of the FA commander of the publishing headquarters and all other copies will be authenticated by the FA S3. A sample FA support plan with a target list and schedules of fire is at tab D of this appendix.

I-19. Close Air Support Plan

a. Preparation of the CAS plan is the responsibility of the G3/S3 assistant at

corps, division, and brigade who has staff responsibility for air support (fig I-7). He is assisted by the Air Force representative who provides technical knowledge and advice on employment of CAS. (Appendix D of this manual discusses CAS employment.) Close coordination is maintained with the FSCoord to insure that the CAS plan is integrated into the fire support plan contained in the OPORD. The ground force commander approves the CAS plan and it is disseminated through CAS channels with an information copy to the FSCoord.

b. The CAS plan supports the OPORD of the force and amplifies the information in paragraph 3 (or the fire support annex) to issue specific instructions on *how* CAS will accomplish its portion of the fire support plan for the operation. The force will be distributed

CAS sorties for planning by the next higher echelon. If no sorties are distributed or the distribution is inadequate, the force headquarters must seek additional sorties from the next higher echelon. The fire support plan in the force OPORD or the annex will then reflect the total sorties distributed for planning and how these sorties are further distributed to subordinate elements for their *planning*. These sorties form the basis for development of the CAS plan. When the plan is completed, it is forwarded through Army channels to the next higher headquarters for approval and consolidation. The corps G3 air consolidates all CAS plan requirements for sorties from subordinate headquarters and presents them to the Air Force tactical air control center (TACC) at the corps TOC as a statement of Army requirements for support (fig I-18).

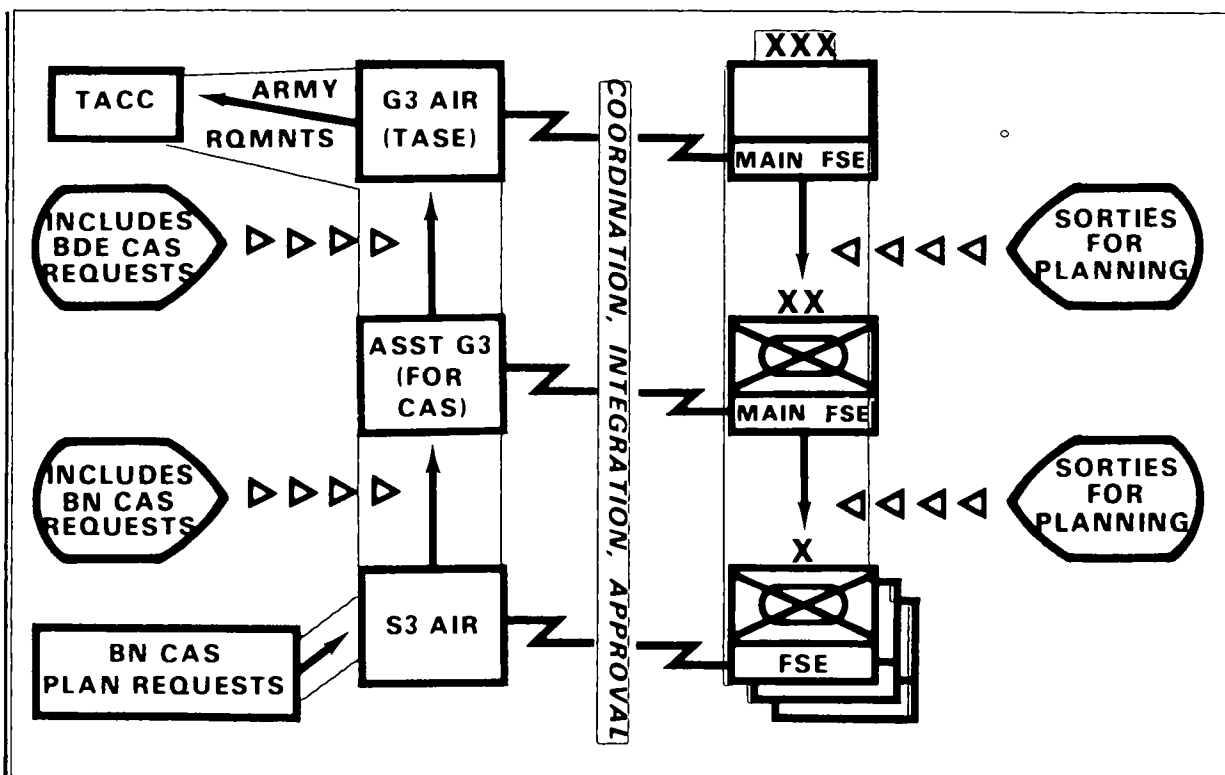


Figure I-18. CAS planning.

c. The CAS plan may consist of a written portion with a target list and target overlay.

An example of a CAS plan is at tab E of this appendix.

I-20. Naval Gunfire Support Plan

a. When NGF is available to the force, it will be incorporated into the fire support plan by the FSCOORD and will be reflected in paragraph 3 of the OPORD. Members of the air naval gunfire liaison company (ANGLICO) at division and brigade levels will advise the FSCOORD on the employment considerations of NGF. Appendix E of this manual discusses employment of NGF and the ANGLICO.

b. The NGF representative is responsible for preparation of the NGF support plan to provide specific instructions to NGF elements on how their portion of the fire support plan is to be accomplished (figs I-7 and I-8). This plan is developed in close coordination with the FSCOORD, approved by the force commander, and disseminated through NGF channels with an information copy to the FSCOORD. An example of the NGF support plan is at tab F of this appendix.

I-21. Chemical Support Plan

Chemical fire support planning documents normally are prepared no lower than division

level. The corps commander usually will not authorize the decentralization of chemical weapons control below division level. The chemical support plan is composed of a written portion (five-paragraph field order format), chemical fire support table/target list, and a target overlay. A sample chemical support plan is at tab H of this appendix.

a. Corps Chemical Support Plan (*fig I-19*).

The corps chemical officer is responsible for preparation of the chemical support plan (figs I-7 and I-8). Target selection and analysis is determined in coordination with the FSCOORD. The plan is developed in line with the commander's guidance concerning the employment of toxic chemical weapons. The number of weapons and delivery systems available to the corps normally appears in the chemical portion of paragraph 3 of the corps OPORD.

The corps retains CAS sorties for air-delivered toxic chemical weapons. The corps FSE may task the weapon systems of the divisions, when necessary, to fire a corps-developed target.

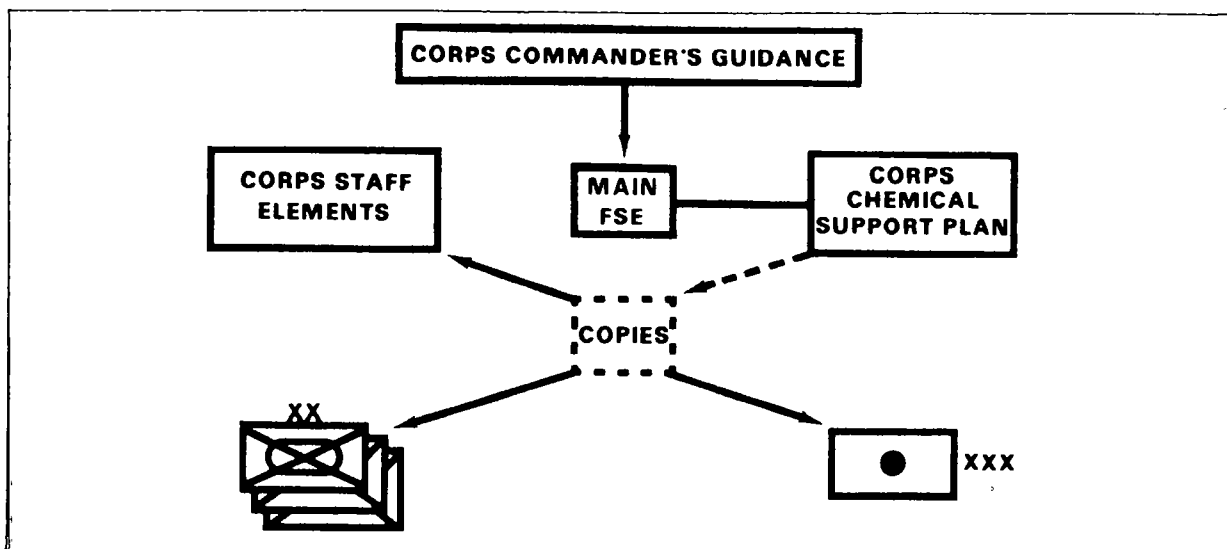


Figure I-19. Corps chemical support plan.

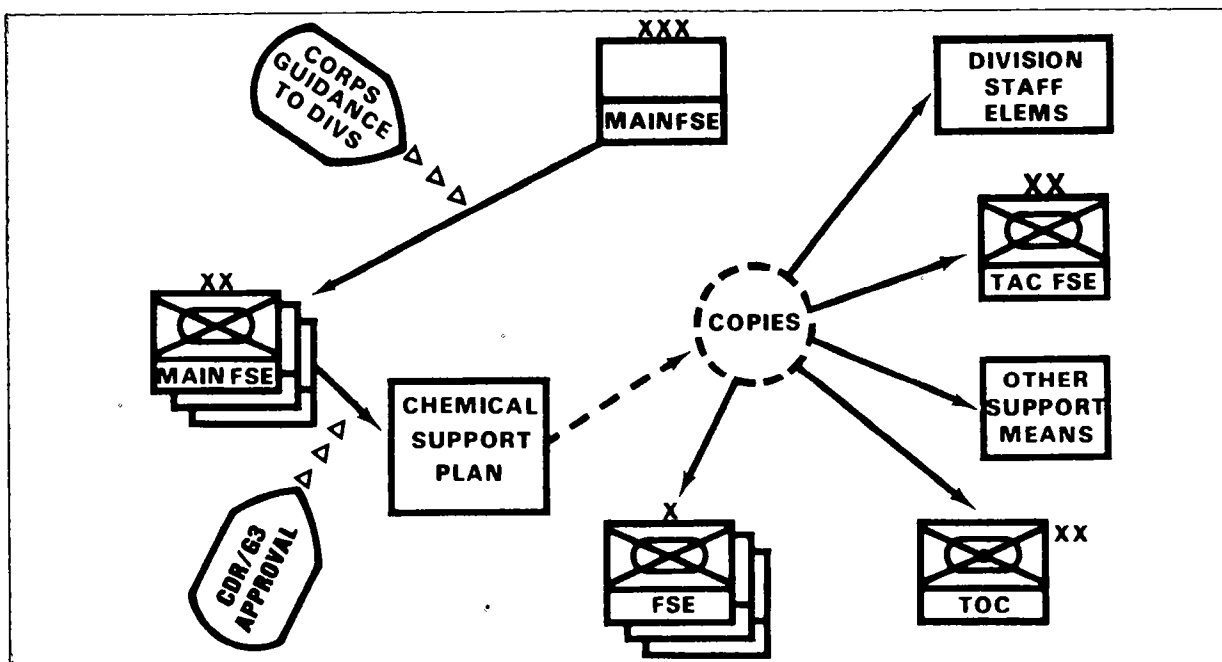


Figure I-20. Division chemical support plan.

b. Division Chemical Support Plan (fig I-20).

The division chemical officer is responsible for the preparation of the division chemical support plan. The plan is formulated based on the weapons available to the division from corps and on employment guidance received from the division commander.

Chemical targets for planning are

developed internally at the division MAIN FSE using all-source intelligence means (fig I-21). Targets are also sent to the division from the corps FSE for attack within their respective zones. The brigade FSEs request planned chemical targets from the division MAIN FSE. These brigade targets are approved by the brigade commander prior to being requested from the division MAIN FSE.

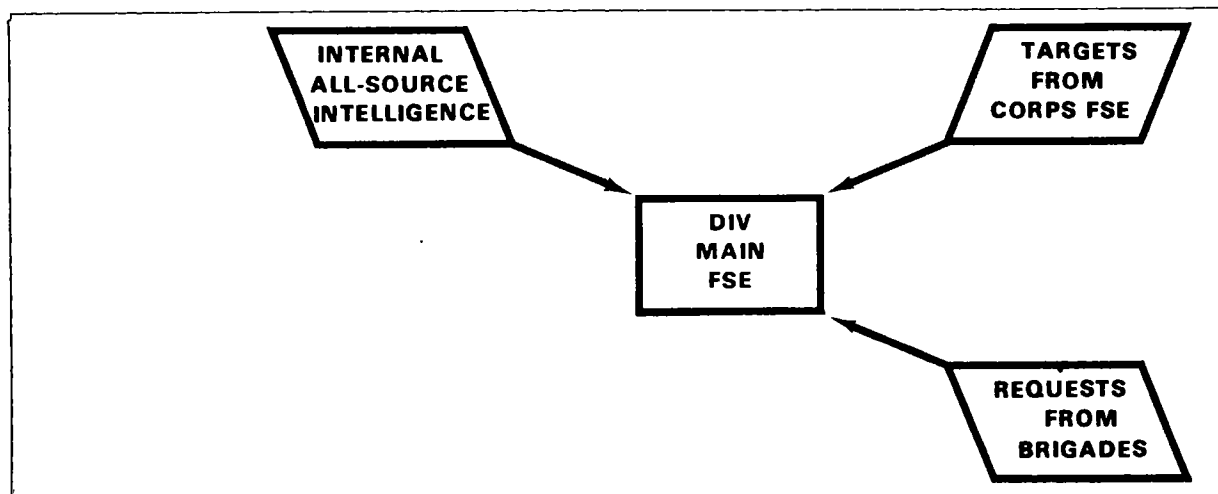


Figure I-21. Toxic chemical target planning sources.

I-22. Nuclear Fire Planning

The corps nuclear weapons package must contain the number and mix of nuclear weapons required to support any one of several anticipated contingencies covered by a single corps operations plan. Packages are planned prior to hostilities and are then refined to suit the actual tactical situation before employment during hostilities. The corps and division FSEs plan the corps nuclear weapons packages.

a. Prehostility Planning.

(1) *Divisions Plan Subpackages.* A division subpackage is the fire plan for nuclear weapons employment within the division area in support of a single corps contingency. The division MAIN FSE will plan, in accordance with the corps and division commander's nuclear planning guidance, a subpackage for each corps contingency for which the division is required to plan. The weapons requirements and aimpoints for the subpackages are determined using *target-oriented or preclusion-oriented analysis*. Preclusion-oriented analysis requires input from several sources in the division staff.

(a) *Preclusion overlay.* The G5, in coordination with the G2, provides the FSCOORD with a preclusion overlay (fig I-22). The preclusion overlay identifies the areas where excessive nuclear weapons effects must be precluded to comply with the commander's collateral damage preclusion guidance.

□ Areas with a population equal to or greater than the level specified in the collateral damage preclusion criteria are outlined with solid lines. Collateral damage *must be* precluded in those areas.

□ Communities with populations less than the level specified in the collateral damage preclusion criteria are outlined with dotted lines. Collateral damage *should be* precluded in those areas if tactically feasible.

(b) *Nuclear planning threat overlay.* The G2, in coordination with the G3, provides the FSCOORD with a nuclear planning threat overlay (fig I-23). The nuclear planning threat overlay portrays where the enemy maneuver and fire support units are assumed to be at the time nuclear weapons are to be employed for a particular contingency. This overlay is based on an analysis of the division's planned operations, the enemy tactical doctrine, and the terrain. The nuclear planning threat

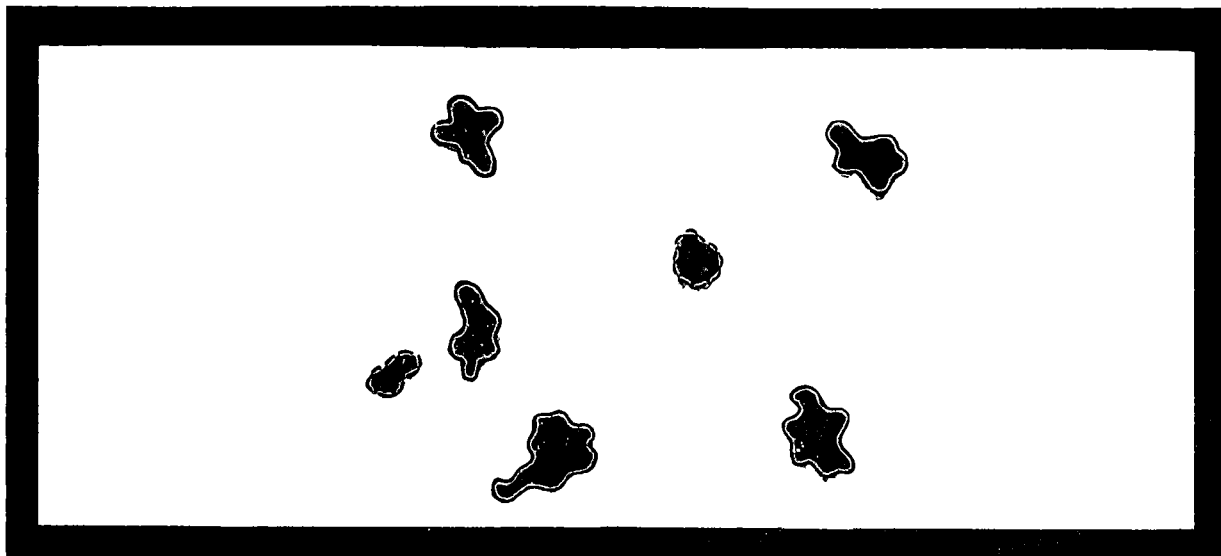


Figure I-22. Preclusion overlay.

overlay identifies those areas where the enemy will probably concentrate his forces and provide worthwhile targets.

(c) Aimpoint Selection. Preclusion-oriented analysis is used when detailed target information is not available. This is generally true during fire planning and when dealing with very mobile targets which cannot be immediately engaged with nuclear weapons. Aimpoints are selected to provide the maximum coverage of probable enemy locations without violating preclusion criteria. The nuclear planning map is a composite of the preclusion overlay and the threat overlay. Either of the techniques discussed on page 6-16 may be used in the selection of these aimpoints. Preclusion criteria are met when the aimpoint is located on or outside the appropriate preclusion contours (contour technique) or such that the appropriate preclusion circle does enter precluded areas. Coverage of suspect target areas by the weapon radius of damage circle will be used in the assessment of target defeat. Smaller yields may be used nearer

friendly troops and civilian population centers. Figure I-24 illustrates the template technique. Note that the smaller weapon system yield is more effective near the town against area 2.

□ Collateral damage distance. The CDD is obtained from the nuclear target analyst in the FSE. In accordance with the commander's guidance, a specified degree of assurance (50%, 90%, 99%, etc.) of not exceeding the collateral damage preclusion criteria will be associated with the CDD to account for the delivery system's horizontal dispersion. The size of the CDD depends upon the delivery system's HOB, yield, and—for most tactical delivery systems—range to the aimpoint. Since delivery unit locations probably will not be known during prehostility planning, the CDD should be determined using an assumed range (e.g., 2/3 system range) to the aimpoint. The planning based on this CDD will remain valid as long as the assumed range is not exceeded during use.

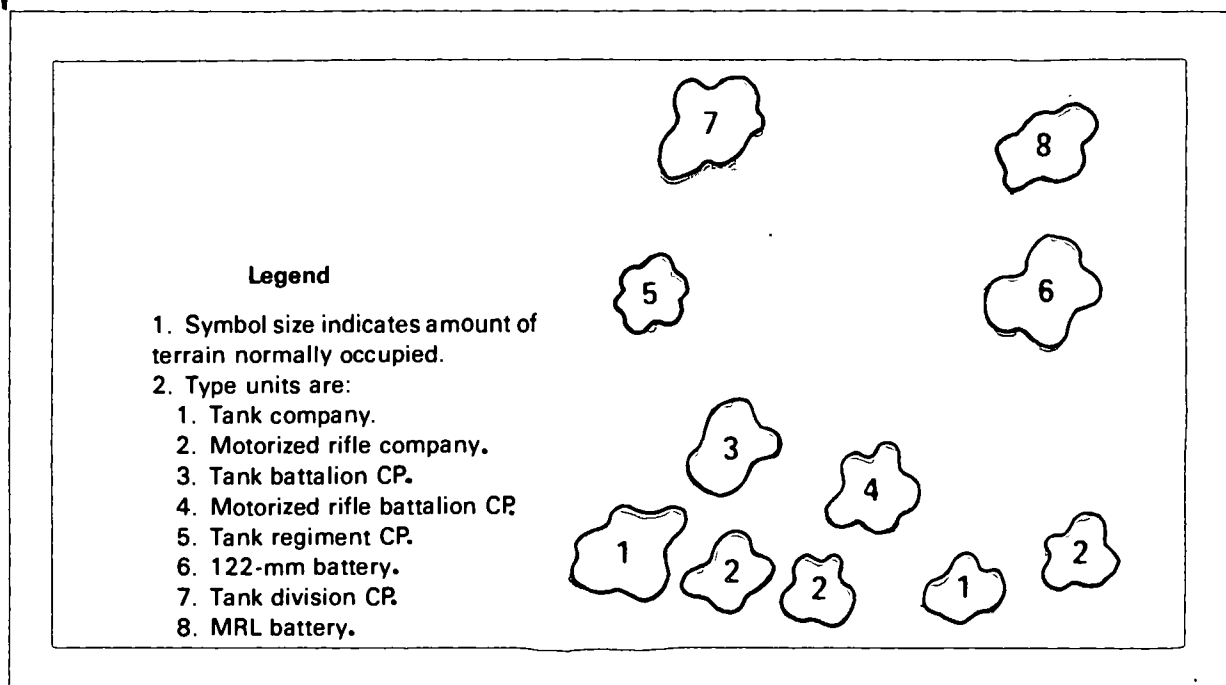


Figure I-23. Nuclear planning threat overlay.

□ Radius of damage. The expected RD is obtained from the nuclear target analyst. The RD circle shows the area coverage for the target category and level of casualties or damage specified by the commander (e.g., immediate transient incapacitation of personnel in tanks). The size of the expected RD depends upon the delivery system, HOB, yield, and—for most tactical delivery systems—range to the aimpoint. The RD also should be determined using an assumed range to the aimpoint (e.g., 2/3 system range) and will remain valid if this assumed range is not exceeded during use. The weapon template should be positioned on the nuclear planning map so that maximum coverage of the assumed enemy locations is obtained with the RD circle while observing the preclusion criteria. Overlapping of RD circles should be avoided to insure maximum area coverage with available weapons.

Minimum safe distance (MSD) and least separation distance (LSD). The MSD for troop safety and LSD for the preclusion of damage or obstacle production are obtained from the target analyst. The MSD is the distance the weapon's aimpoint must be displaced to avoid exceeding the commander's risk criteria of casualties to friendly troops. Initial planning will consider the assumed line of contact. Other limiting requirements dealing with the avoidance of damage to structures desired for friendly use (e.g., bridges) or of creating obstacles (e.g., forest fires) are considered by insuring the aimpoint is on or outside the appropriate LSD contour. Both the MSD and LSD are dependent on the delivery system, HOB, yield, and for most delivery systems, range to the aimpoint (e.g., 2/3 system range) and will remain valid if this assumed range is not exceeded during employment.

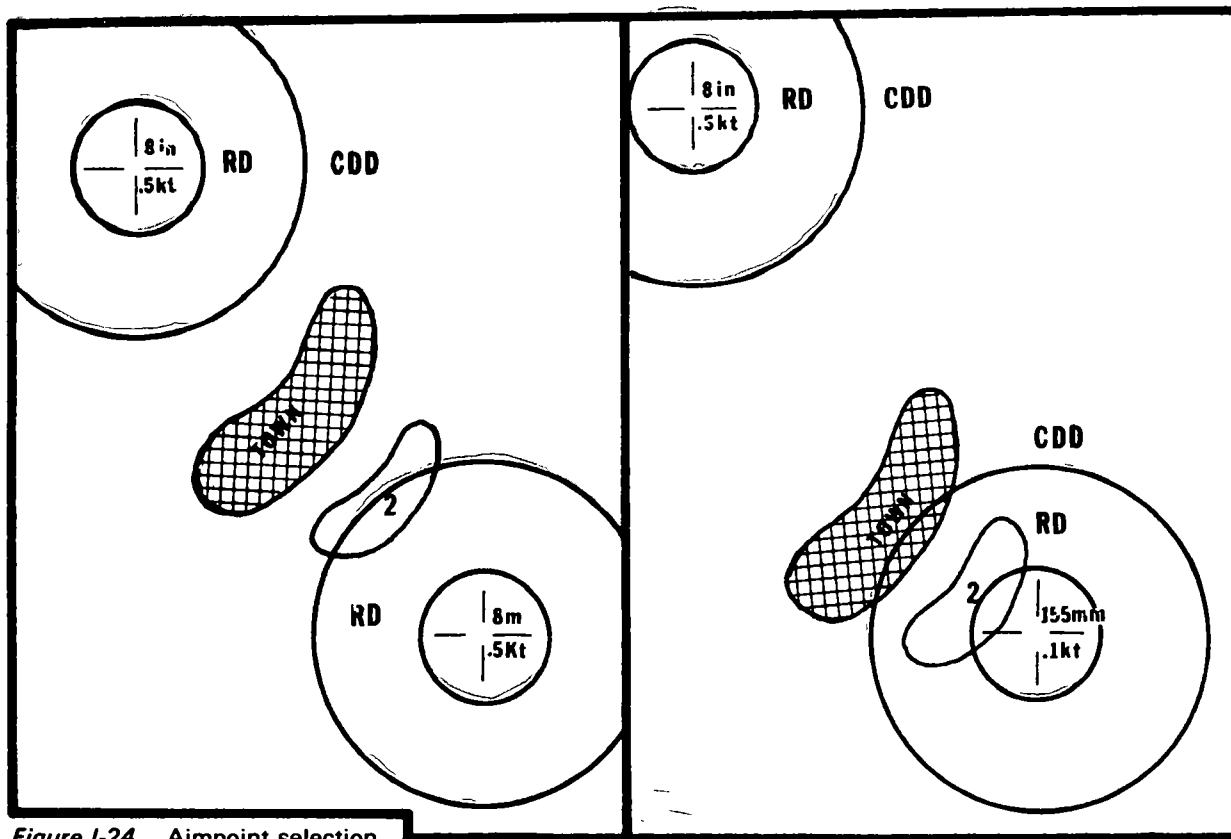


Figure I-24. Aimpoint selection.

(d) **Assessment.** An assessment of coverage with the planned weapons and aimpoints is conducted to insure that the total number and mix of weapons in the subpackage is sufficient to dramatically change the tactical situation. The percentage of the area assumed to be occupied by enemy units that is covered by the radii of damage circles is estimated. If the commander's coverage defeat criterion has not been met, more weapons should be planned.

(e) **Target-oriented analysis.** Known or fixed targets, such as bridges or airfields, may be targeted using the target-oriented method of analysis. Known target information is used to select the best weapon system and aimpoint to produce the desired coverage on an individual target. The nuclear target analyst in the FSE performs this analysis, using procedures described in FM 101-31-1.

(f) **General planning guidance.** The following general planning guidance will assist the FSCoord in the selection of weapons and aimpoints.

- Subkiloton weapons are generally ineffective when used individually against poorly located targets. They should be used near the FEBA where direct target location is more possible, or properly scheduled and fired in groups of two or more at greater ranges.

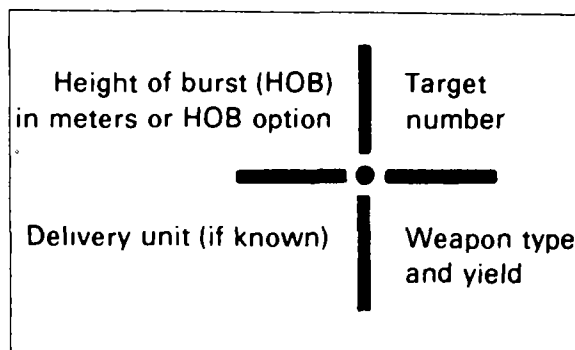
- DS units should provide the fires nearest the FEBA. This is because of the low yield weapons they fire, and the ability of FISTs and FSOs to identify close-in critical targets that can result in aimpoint refinement during hostilities.

- Divisional heavy battalions can also place small yield fires close to the FEBA for the same reasons discussed for the DS battalions.

- Heavy battalions provided by corps, and TACAIR using larger yields, should be employed deeper into the area on relatively fixed aimpoints.

(g) **Preparation of subpackage.** Using the FSE, the FSCoord prepares a subpackage for each corps contingency that the division has been directed to support. Each subpackage will include:

- Weapons and yields required.
- An aimpoint list or overlay. Each target designation may include:



- A schedule of fires. The nuclear schedule is determined by the nuclear target analyst using procedures contained in FM 101-31-2 (SRD). Preinitiation (yield degradation) and the interference by one detonation with another weapon in flight must be considered in determining this schedule.

- The timespan. The length of the schedule and the delivery units' capabilities will determine the time required to employ the subpackage.

(2) *Corps Consolidates Packages.*

(a) Weapons requirement for each contingency. Division subpackages are used by the corps FSE to consolidate the divisions' planning into a corps nuclear fire plan and weapons requirement for each contingency (fig I-25). Using the same techniques as in planning subpackages, the corps FSE adds weapons and aimpoints for each corps contingency to -

- attack enemy forces at a greater depth on the battlefield;
- fill in areas covered by corps target acquisition and intelligence gathering resources; and
- attack targets directed by higher headquarters.

NUCLEAR REQUIREMENTS FOR CONTINGENCY 1

Delivery System	Yield (KT)**	1st Div	2d Div	Corps	Total
155-mm	0.1	10	8	2	20
	0.5	*	*	*	*
8-in	0.5	*	*	*	*
	2.0	*	*	*	*
	5.0	*	*	*	*
Lance	5.0			*	*
	100			*	*
ADM	1.0	*	*		*
TACAIR	2.0			*	*
	10.0			*	*
TOTAL		*	*	*	*

*Actual numbers of weapons and totals are situational.

**Hypothetical Yields

Figure I-25. Contingency weapons requirements.

(b) Determination of corps packages. The corps FSE resolves the nuclear weapons requirements for each contingency into the fewest number of distinctly different packages. All contingencies that occur at the same general depth in the corps area would be included in a single corps package that will support any one contingency in that package. Overlapping package areas allow the corps commander to maintain some flexibility in deciding when and where he will initiate the use of nuclear weapons. The weapons requirements for each contingency are resolved into a package. Figure I-26 shows the consolidated nuclear requirements for each contingency. To insure that the

weapon/yield mix for the package is sufficient to support any contingency included in the package, the largest number of each weapon/yield is included in the package. Contingencies 1 and 2 are included in package ELM. The requirements for the 155-mm 0.1 KT are 20 and 18 weapons respectively. In this case, 20 weapons are included in the package ELM requirements. Package OAK consists of only contingency 3 so that the package requirements should be identical to the contingency requirements. The Corps FSE determines a package area and timespan that are suitable for all contingencies included in each package.

Delivery System	Yield (KT)**	Contingency 1	Contingency 2	Package ELM	Contingency 3	Package OAK
155-mm	0.1	20	18	20	19	19
	0.5	*	*	*	*	*
8-in	0.5	*	*	*	*	*
	2.0	*	*	*	*	*
	5.0	*	*	*	*	*
Lance	5.0	*	*	*	*	*
	100	*	*	*	*	*
ADM	1.0	*	*	*	*	*
TACAIR	2.0	*	*	*	*	*
	10.0	*	*	*	*	*
TOTAL		*	*	*	*	*

*Actual numbers of weapons and totals are situational.

**Hypothetical yields

Figure I-26. Package weapons requirements.

(c) Package review and approval. The corps packages are forwarded to higher headquarters for approval. The following information would be included as a minimum:

1st Corps Nuclear Weapons Package OAK

Purpose: To halt enemy penetration north of a line between hills 1200 and 900 and permit reconstitution of a conventional defense.

Number: * nuclear weapons not to exceed * — 155-mm/0.1 KT; * — 155-mm/0.5 KT; * — 8-in/0.5 KT; * — 8-in/2.0 KT; * — 8-in/5.0 KT; * — Lance/5.0 KT; * — Lance/10.0 KT; * — ADM/1.0 KT; * — TACAIR/2.0 KT; * — TACAIR/10.0 KT.

Time: Time frame—to be requested when needed.
Timespan—not to exceed * minutes.

Area: From MB 9668 to MB 0838 to MA 3757 to MA 9886 to MB 9668.

Constraints: Preclude 5-percent casualties requiring hospitalization in urban areas over * population and 5-percent moderate damage to buildings in those communities (99 percent assurance level).

*Actual numbers (weapons, minutes, population) are situational.

Note. Yields shown above are hypothetical.

(3) *Nuclear Support Plan.* Corps and division nuclear support plans are prepared for approved packages. Figure I-27 shows the dissemination of these nuclear support plans.

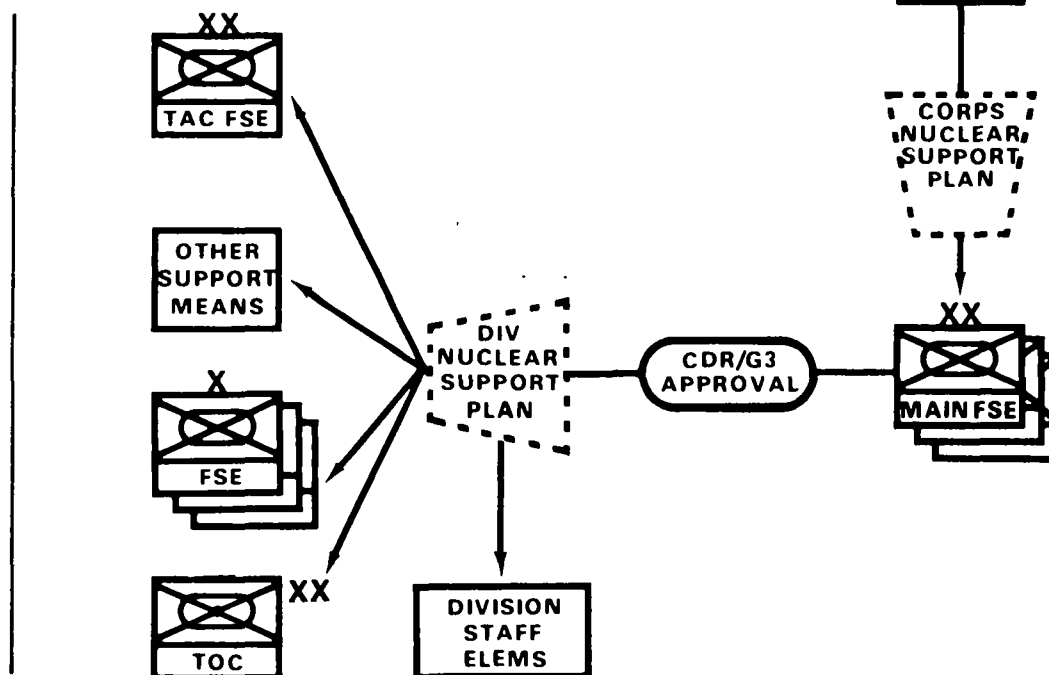


Figure I-27. Dissemination of nuclear support plans.

(a) Corps nuclear support plan. Nuclear fire planning information may be contained in paragraph 3 of the corps OPOD (e.g., PNL, weapon systems available, etc.). An approved corps package is documented in a nuclear support plan composed of a written portion (five-paragraph field order format) with appropriate inclosures (overlays, package contingency instructions to division, etc.). The corps nuclear support plan reflects the final requirements for each division to execute its part of the corps package. This plan is disseminated to the divisions.

(b) Division nuclear support plan. The divisions now finalize their nuclear support plans providing instructions to subordinate elements. The MAIN FSE of the division prepares a written portion in the five-paragraph format with the appropriate inclosures (overlays, subpackage contingencies, etc.). The plan will be disseminated to subordinate division elements after approval of the division commander. An example of a division nuclear support plan is shown at tab G of this appendix.

b. Planning During Hostilities.

Upon identification of a particular package, contingency, and additional commander's guidance for employment, the prehostility nuclear fire planning must be adapted to the actual tactical situation. The corps package will be refined within the limits established by higher authorities and planned or approved package parameters—number of weapons, area, and timespan. This package refinement provides the tactical commander with nuclear fire planning, which is flexible and responsive without compromising the directives of the National Command Authority (NCA) and higher echelons in the theater.

(1) *Package Refinement.* Within the limits established by higher authorities, the employment constraints and package parameters, the package will be refined to provide the best tactical effect. Changes that

could be made include

- adjusting individual aimpoints within the area approved;
- adjusting yields within constraints;
- exchanging weapons or delivery systems/units between aimpoints, abiding by preclusion constraints;
- reducing number of nuclear weapons in the package if tactical situation permits;
- adjusting schedule of fires within the approved timespan; and
- selecting time for timespan to begin for best tactical effect.

(2) *Final Aimpoint and Weapon Selection.* Aimpoint and weapon selection are accomplished during package refinement using the same techniques as in the prehostility planning. Target-oriented targeting (acquired, relatively fixed targets) techniques may be used more often for aimpoint/weapon refinement at deeper ranges. The types of targets at the deeper ranges would typically include chokepoints, headquarters, supply installations, etc. The weapons templates used during prehostility planning remain valid during refinement as long as the assumed ranges upon which the collateral damage distances and radii of damage were based are not exceeded. If these assumed ranges are exceeded, the CDDs and RDs should be adjusted to insure that the collateral damage preclusion criteria and threat defeat criteria have been met. It may be necessary to modify the nuclear planning map during hostilities. Identified enemy targets may replace assumed enemy locations. Additional collateral damage preclusion areas may be added such as refugee concentrations not identified during prehostility planning.

(3) *Troop Safety.* To insure that friendly troops are subjected to no more than the risk level specified by the commander (e.g., negligible risk to unwarned, exposed personnel) minimum safe distances (MSD) from friendly nuclear detonations must be considered during package refinement. MSD contours for each delivery system and yield

are drawn from the most up-to-date line of contact (fig I-28). The final aimpoint for each weapon must be located on or farther from friendly troops than the respective MSD contour.

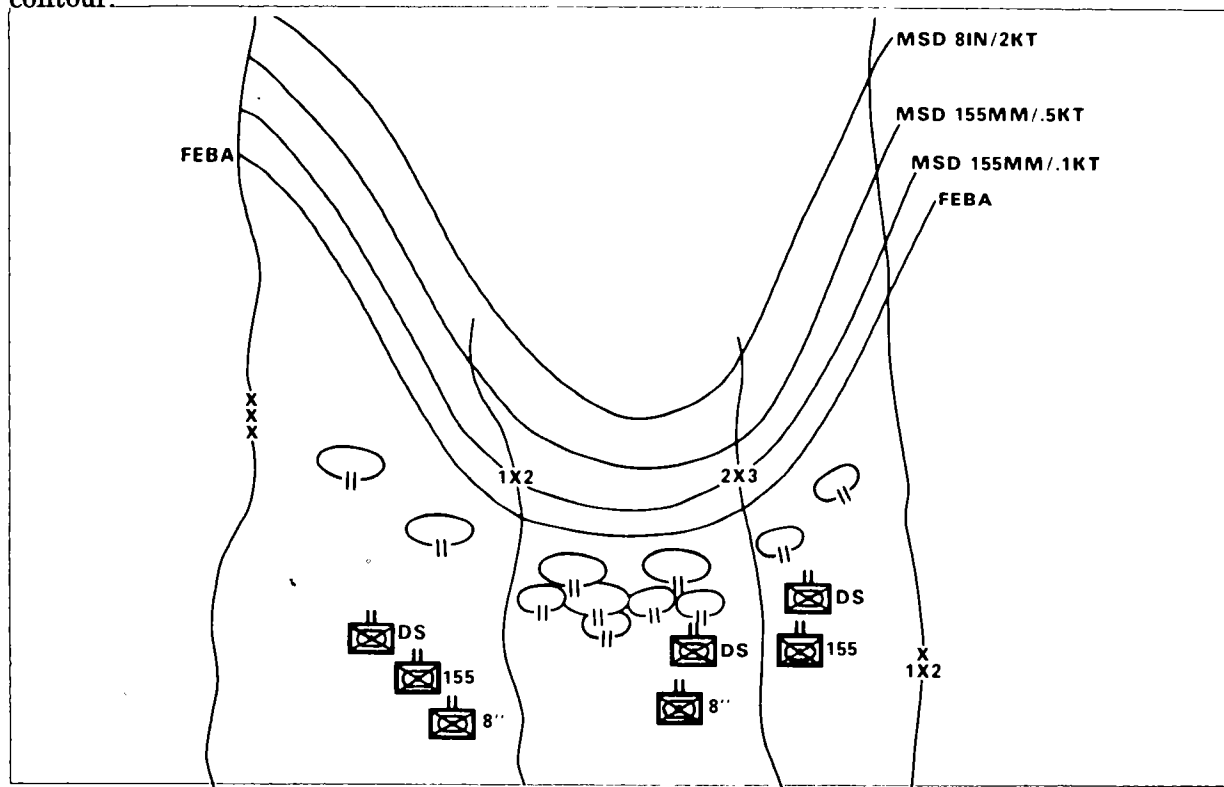


Figure I-28. MSD contours.

Section IV. INFORMAL FIRE SUPPORT PLANNING

The degree of formality in fire support planning is a function of level of command and time available to plan. A specific division between formal and informal fire support planning is difficult to define and is generally meaningless because most fire support plans begin informally and with sufficient time evolve into a formal product. Tied to the dynamics of the battlefield and the immediate fire support needs of the supported unit, informal fire support planners attempt

to achieve maximum fire support responsiveness in a minimum of time. More flexible in procedure, than formal fire planning, informal fire planning depends on a quick understanding of the requirements of the supported unit and an aggressive attitude by the FSE to meet those requirements in the time available. This is achieved through close personal coordination, an efficient communications system, meaningful SOPs, fragmentary orders, and battle drills and training. Informal fire support planning is verbal and goes from lower to higher. It ranges from a FIST chief alerting the FSE/FDC of an impending hasty attack to a battalion FSO consolidating the target lists of several companies.

I-23. Company Level Informal Planning

At the company team, the FIST headquarters provides fire support planning for the commander. The FIST chief is the company FSCOORD. He adheres to the company commander's fire support guidance and organizes and supervises the activities of the FIST in support of the company. Although a planner, the FIST chief retains the habitual task of being an FO for the company.

The FIST chief may perform either deliberate or hasty fire planning to support a company/company team operation. The decision to use one or the other technique normally is dictated by the time available for planning. Both techniques are based upon the premise that targets must be placed into the fire planning channels soon enough for them to be processed at a fire direction center. When time permits and maintaining surprise is not required, selected targets are adjusted in to improve firing data and to insure effect on targets when fired.

a. Deliberate Fire Planning.

Deliberate fire planning techniques are applied when the situation is relatively well developed and time permits detailed step-by-step procedures.

□ The FIST develops targets and assigns target numbers based on the company/team commander's guidance, the terrain, and the tactical situation. These targets are coordinated with the other fire support personnel at company team level (weapons platoon leader, platoon FOs, and NGF spotter). The sources of these targets may include information obtained from the platoon FOs, direct observations, combat patrols, maneuver unit ground surveillance radars, unattended ground sensors, the maneuver commander, the maneuver battalion FSO, or the DS FA battalion S2. Normally, the FIST chief will initially record these targets on his map, using target

symbols. He briefs the company team commander on his plan for fire support of the company team operations and obtains the commander's approval.

□ The FIST chief transfers the approved targets to a target list, an informal document that contains information required by the receiving FDC to quickly identify, process, and compute technical firing data for the indicated targets.

□ The mortar target list is forwarded to the company mortar FDC and, for those targets that the mortars cannot handle or that require a more suitable means, a list is sent to the battalion FSO by the most secure means available within existing time constraints. A member of the FIST may personally handcarry the target list to the maneuver battalion FSO. If wire communication has been established, the FIST chief should endeavor to establish a conference call with the FSO, DS battalion FDC, and the firing battery that has been supporting him, and transmit his target list to all simultaneously. If time precludes either of the above methods, the FIST chief must encode his target list and transmit it to the FSO (fig I-29).

□ The battery that normally fires for the FIST monitors the communications between the FIST and FSO, acknowledges the call, computes data and records the target as on-call. When the battery acknowledges the call between the FIST and FSO, the FIST knows that its target has been placed in an on-call status in the battery FDC.

□ The battalion FSO consolidates the targets from all company FISTs, resolves conflicts, adds targets as required, and assigns targets to FA, heavy mortars, or other means.

□ The battery also monitors the FSO's communication to the DS battalion FDC to check for additions or deletions and acknowledges the transmission.

□ The DS battalion FDC calls the battery concerning a target only if there is a change. They will send the target list to additional batteries as necessary.

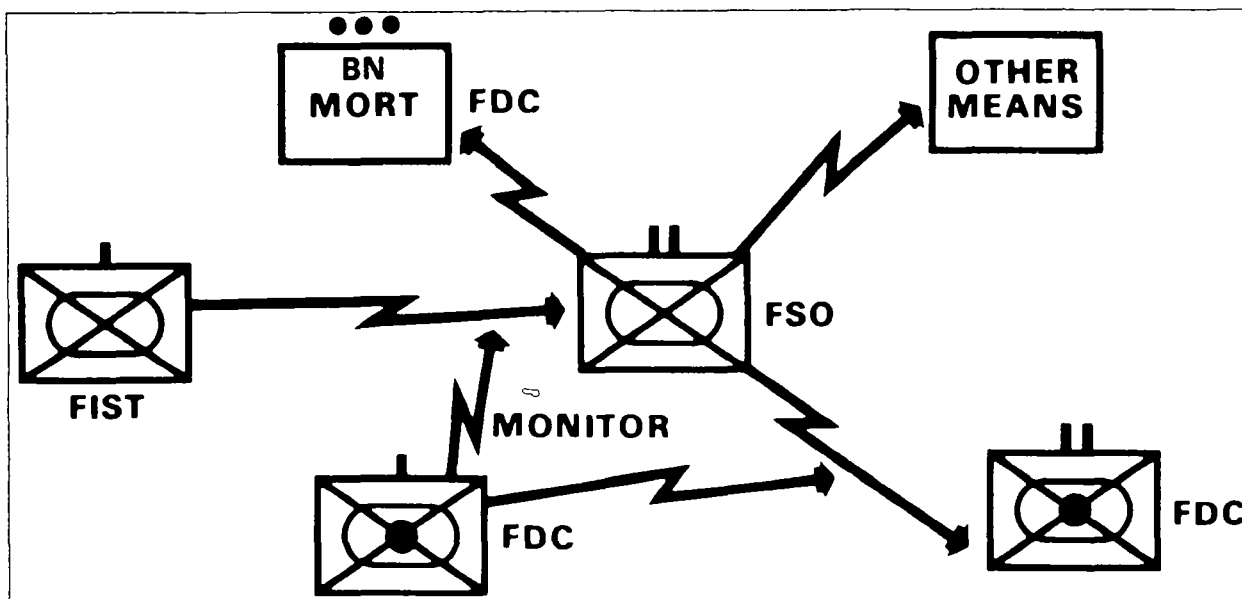


Figure I-29. Informal planning channel.

b. Quick-Fire Planning.

Quick-fire planning techniques are used when time is limited. They are standard techniques (see STANAG 2031) which are extremely flexible. They may be applied at the company/battalion/brigade levels in offensive or defensive situations. They also may be used with the dedicated battery, in assigned priority of fires, or with the traditional DS to supported brigade relationship. As with the deliberate procedures, the FIST chief develops targets and assigns target numbers. With a dedicated battery, the FIST chief normally restricts his target selections to likely enemy locations and establishes a minimum number of priority on-call targets. The FIST chief assigns these targets to the most effective fire support system (artillery or mortars) and requests suppression on priority targets. With nondedicated batteries, the FIST chief uses various schedules (e.g., groups and series) in addition to on-call targets to implement the company commander's fire support plan. Additionally, when surprise is no longer a factor, he may recommend to the commander that the FIST adjust in certain targets prior to the operation to insure accuracy of fires. Regardless, the

keys to quick-fire planning in the heat of battle with limited time are concurrent and cooperative activity and efficient communications procedures. Specific field artillery procedures are addressed in FM 6-30 and FM 6-40.

c. Encoding of Target Lists.

Encoding of target lists for either deliberate or hasty planning can be accomplished by a variety of means, which are usually specified by unit SOP.

Use only authorized operations codes and encode devices, such as the KAL-61. See TC 6-20-10, *The Fire Support Team (FIST)*, for more details.

I-24. Battalion Level Informal Planning

At the battalion FSE, the FSO has access to FA, heavy mortars, CAS, and perhaps other means for which planning is conducted. Target lists from the FISTs are consolidated and purged of duplication and new targets are added as required to insure adequate support. Fire support assets available to the FSO are assigned targets,

and requirements beyond the battalion capabilities are forwarded to the brigade FSE. The list of planned targets is provided to each fire support agency tasked and to the brigade FSE. The FSO continually reviews the planned targets in relation to the scheme of maneuver or plan of defense.

Section V. FIRE SUPPORT COORDINATION

I-25. Fire Support Coordination Principles

Fire planning is of little practical value if the FSCOORD is not able to effect the coordination necessary to insure the successful execution of a plan. Coordination is *keyed* on established principles. These principles are applied by FSCOORDs at all levels of a force.

a. Insure a Continuing Flow of Targeting Information.

The FSCOORD must insure that *all* targeting information available at his echelon continues to flow into the fire support system.

b. Consider Use of All Available Fire Support Means.

Each FSCOORD considers the fire support available at his and higher levels and the command guidance for its use. In applying this principle, the FSCOORD must be mindful of the echelon at which he is working. The support available at company and battalion TF may differ considerably from the fire support means available for coordination at division. As combat operations unfold, it is often necessary to change selected weapons systems and munitions, and in considering alternate systems, the FSCOORD should seek the advice of other fire support representatives at his echelon. Sometimes it will be necessary to use the *most available system* even though it is *not the most effective system*. This puts

fires on the target *now* while the request continues for a more effective means to use *later*. For some situations, the FSCOORD may request multiple systems for use against a single target area, as when suppressive fires are directed against enemy ADA sites to permit friendly aircraft to attack a target unhindered. The FSCOORD must be concerned with using available fire support consistent with the commander's desires for fire support systems *now* and in the *future*. He must insure that his actions do not run contrary to the commander's guidance and that resources will be available for future operations.

c. Use Lowest Echelon Capable of Furnishing Effective Support.

Fire support is delivered by the lowest echelon having effective means available. If a company can do the job with organic mortars, the FIST does not request FA support. The FSCOORD is constantly confronted with the question of how to get the most from the fire support means at his own level before seeking additional fires from the next echelon. He must decide what is needed and, if his own assets will not meet that need, request additional fire support from the appropriate echelon.

d. Use the Most Effective Means.

Requests for fire support are normally sent to the agency with the most effective means. The FSCOORD considers the nature and importance of his target, the likelihood of it remaining in the current location, the availability of attack means, and the results desired. To get the desired results, it is frequently necessary to use a less desirable means to temporarily fix the target, until a more effective means can attack. An example of this is a situation in which CAS is the most desired means but will require about 20 minutes to arrive over the target, whereas FA and mortars can fire *now*.

e. Furnish Type Support Requested.

Usually the requestor of fire support is in the best position to know *what* is needed. However, the FSCOORD is in the best

position to weigh the request against the commander's guidance on priority targets and the current and future uses of fire support. A high-priority target for a FIST may be less important when weighed by the FSO at the battalion TF. If a request for fire support is disapproved, the FSCOORD stops the request and notifies all concerned; or when possible and warranted, he substitutes a new means and alerts the agencies to provide (receive) the support.

f. Avoid Unnecessary Duplication.

A key task for the FSCOORD is to insure that duplications are resolved and that only those means needed to get the desired effects are used on a single target. This principle is of great importance on today's battlefield where US forces will be outgunned and outmanned. Judicious use of scarce fire support assets is a *must*; duplication cannot be tolerated. The use of multiple means on a single target is *not* duplication if all the means used are required to achieve the desired results.

g. Consider Airspace Coordination.

The *trajectories* of indirect fire weapons are hazardous to close support aircraft and both are dangerous to other friendly aircraft in the area. The FSCOORD provides inputs concerning fire support uses of airspace to those agencies and personnel engaged in airspace management. At division and corps, air defense personnel collocate with FSE s to enhance this exchange of information. (See FM 100-44 and TC 101-5.) At lower levels this coordination would include FAC s, NGF spotters, AO s, and other users of airspace.

h. Provide Rapid Coordination.

There can be no hesitation in the execution of fire support. The FSCOORD must *know* the characteristics of the various fire support means; he must have *immediate* information on the availability of the means; he must insure that coordination channels are established and are functioning smoothly; and, he must stay abreast of the battle as it develops in order to resolutely attack planned targets and targets of opportunity. He will be

confronted with volumes of information and scores of decision points. When TACFIRE is fielded, the processing of information will be automated to facilitate decisionmaking and to further speed the coordination of fires.

i. Provide for the Safeguarding and Survivability of Friendly Forces.

While *planning* is done regardless of boundaries and friendly locations, the execution or *coordination* of that fire support must always be cognizant of established boundaries and friendly locations. To provide the above rapid coordination the FSCOORD must continually use and update all types of coordinating measures.

I-26. Coordination Considerations

As the FSCOORD coordinates the fires of the available fire support means, he should consider as a minimum the following points as they apply to each means.

a. Field Artillery.

□ The battalion FSO coordinates all requests by FIST s for FA. He will intercede only when additional coordination is required.

□ Battalion FSO s are responsible for establishing communications with the battalion FSO s on the right and left for the purpose of coordinating fires across or near boundaries. One technique is to switch to the CF frequency of the adjacent FSO.

□ Give the job to the lowest echelon capable of furnishing effective support.

□ Surprise massed fires provide optimum effects. A battalion 1 provides much better results than a battery 3 and reduces exposure to enemy target acquisition means.

□ The FSO is responsible for recommending the location of coordinating measures.

b. Close Air Support.

□ Insure that all immediate requests for CAS are justified. An immediate request may cause a preplanned mission of another unit to

be diverted.

- Aircrews believe that the voice from the ground belongs to the man in charge. If it does not, the pilot must know it.
- Do not put the FAC on a busy FM net when he is working fighters. If the first part of a message, "Don't bring the napalm closer" is cut out, a friendly fire incident is born.
- Be prepared to use aircraft when they arrive on station—they usually cannot stay long.
- Keep helicopters out of the way of fast-moving aircraft. Give them an area, altitude, and direction of orbit.
- Be sure the FAC knows how many sorties he has coming, so he can plan orbit areas.
- Be prepared to inform the FAC where other fire support systems will be shooting.
- Decide in advance who will brief the FAC, and have an alternate means of conducting the strike if the FAC becomes a casualty.
- Coordinate strikes close to boundaries with adjacent units.
- An airborne FAC is a must on a smoky battlefield.

c. Naval Gunfire.

- Normally an air/naval gunfire liaison company will be attached to the division and will be responsible for coordinating and directing naval gunfire and naval close air support.
- The period of time that a ship can stay on station depends on several variables: weather, enemy action, replenishment requirements, etc.
- Communications with the ship should be effected as soon as possible to insure early coordination. This is normally ANGLICO's responsibility.
- Because of the flat trajectory, inherent in the naval gun, and the resulting large range probable error, extreme care should be used when the gun-target (GT) line is perpendicular to friendly frontlines.
- The ship's constantly changing position (unless anchored) and/or the movement of

friendly forces may affect the relative attitude of the GT line to friendly frontlines, and may cause cancellation of a fire mission.

- Ships carry varying amounts and types of ammunition but there will be restrictions on what they can shoot in support of maneuver based on their defensive needs.
- Maneuver company elements and the ship must know and understand the emergency signal for lifting fires.

d. Mortars.

- Close and continuous liaison by the FSO with the battalion mortar platoon leader is required to insure that the 4.2-inch mortar fires are coordinated and integrated with other available fire support.
- The FSO and maneuver S3 should know when the 81-mm mortars are firing.
- Mortars displace by echelon to provide continuous support. However, don't expect first round fire for effect accuracy since 81-mm mortars are seldom surveyed.
- High winds have a greater effect on mortar rounds than on low trajectory weapons. Consider this if troop safety is a question.

e. Attack Helicopters.

- Know the frequencies and call signs of the supporting aircraft. Attack helicopters have FM, UHF, and VHF radio capabilities.
- Pilots must know call signs and frequencies and who to check with. Keep them listening (but not talking) on the appropriate maneuver command nets.
- Coordinate with the maneuver S3 to determine who will give the pilot instructions, identify the target, and control the fires.
- Pilots should be briefed in advance on the tactical situation, the air defense threat, FA and mortar GT lines, troop locations, emergency signals for lifting fires, and the method used to mark friendly positions.
- Use the eight points of the compass (N, NE, E, etc.) when talking to pilots. Also, remember that they deal in degrees, not mils.
- Make sure the man on the ground expects attack helicopter pilots to contact him. If he is

not expecting them and is busy when they call, he may tell them to stay off his frequency.

I-27. Fire Request Channels— General

a. The fire support facilities that provide channels for planning (section I) also provide the channels through which the coordination of fire support is conducted. These facilities have immediate access to all the fire support means available for the execution of fire support—the division artillery TOC, the FDC's for mortars and FA, supporting ships, and the CAS action agencies.

b. Fires may be requested from *any* echelon. If the requester does not have direct access to the appropriate fire support agency, the request will be forwarded immediately through fire support channels to an agency capable of providing the requested support. The channels vary with the urgency of the need for fires.

I-28. Company-Level Fire Request Channels

a. Most requests for immediate fire support will originate with the FIST, either the FO's at platoon or the FIST chief as the FO at company. The FIST chief, based on the commander's guidance, establishes the procedures by which he and the other FO's function on the various radio nets to request support. The organization of the FIST team and the equipment available give the FIST chief several options for fire request procedures. The option selected will be based on the degree of centralized control desired, the responsiveness required, traffic density on the nets, and the commander's guidance on how he prefers to operate. Figures I-30 through I-32 illustrate the options and figure I-33 illustrates the radio nets that might be used by a mechanized infantry company FIST headquarters to accomplish these options.

THE FIST'S SPECIFIC FIRE REQUEST PROCEDURES WILL BE BASED ON:

- THE DEGREE OF CENTRALIZED
CONTROL DESIRED,
- THE RESPONSIVENESS REQUIRED,
- TRAFFIC DENSITY ON THE NETS,
AND
- COMMANDER'S GUIDANCE.

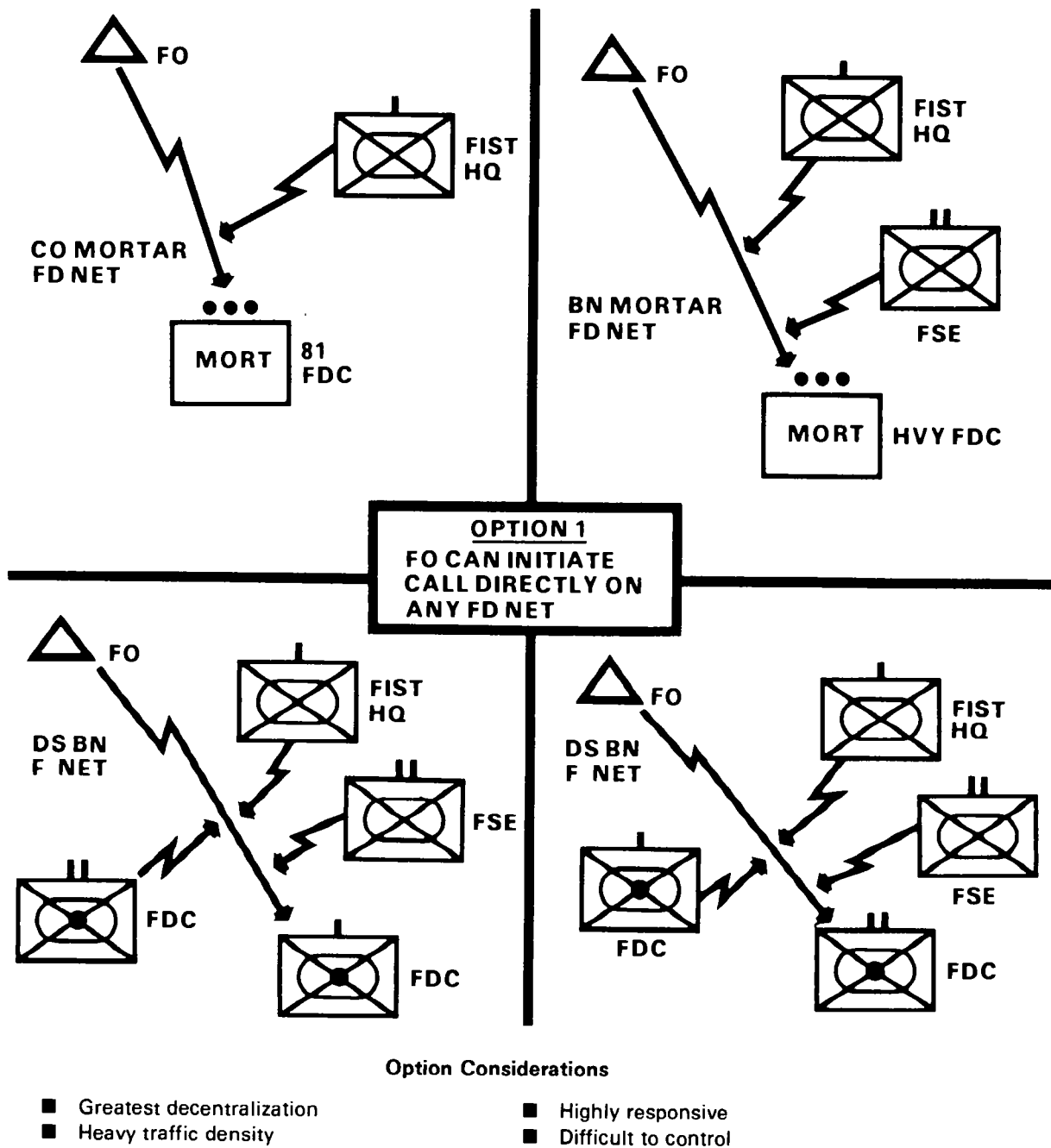
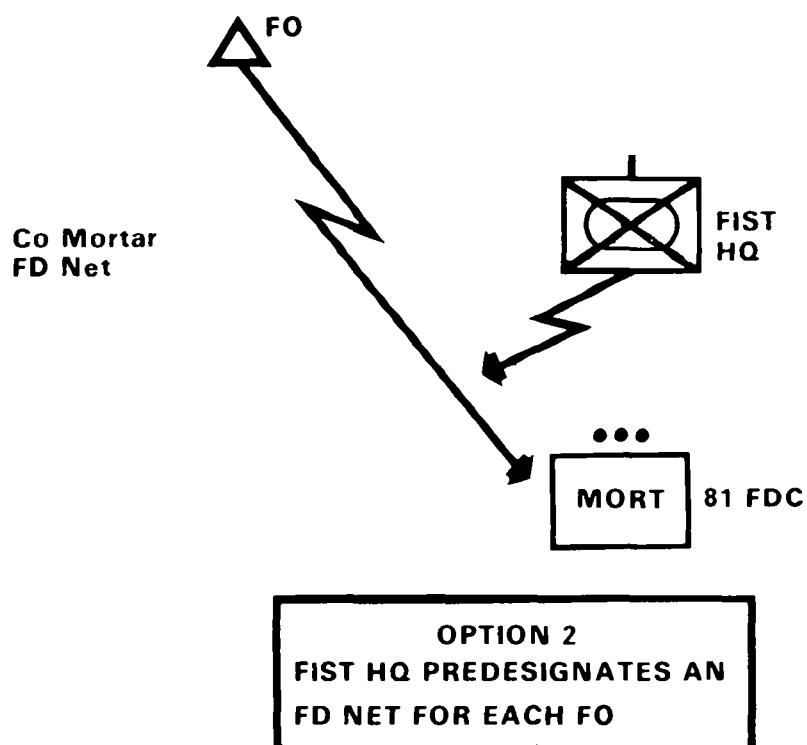


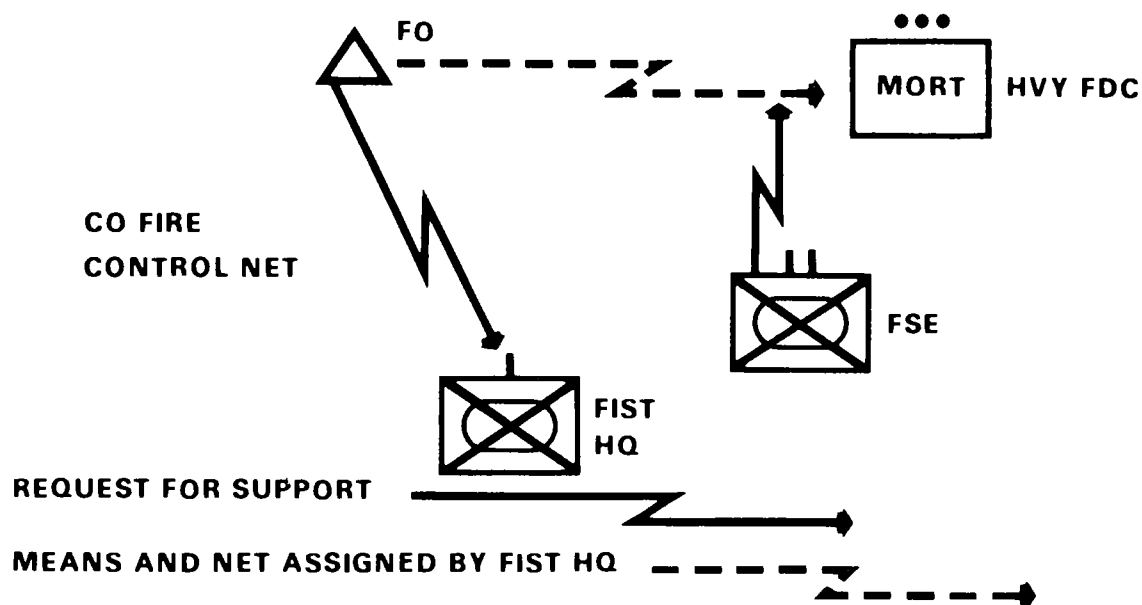
Figure I-30. FIST option 1.



Option Considerations

- Highly responsive if type of fire does not change
- Requires additional transmissions to coordinate change in type of fire
- Provides positive control by FIST HQ
- Prevents FD net overload.

Figure I-31. FIST option 2.



OPTION 3
FO REQUESTS SPECIFIC
SUPPORT THROUGH FIST HQ
WHICH WILL DIRECT FO TO
APPROPRIATE FDC

Option Considerations

- Less responsive than other options
- Greatest degree of control for FIST HQ's
- Prevents FD net overload

Figure I-32. FIST option 3.

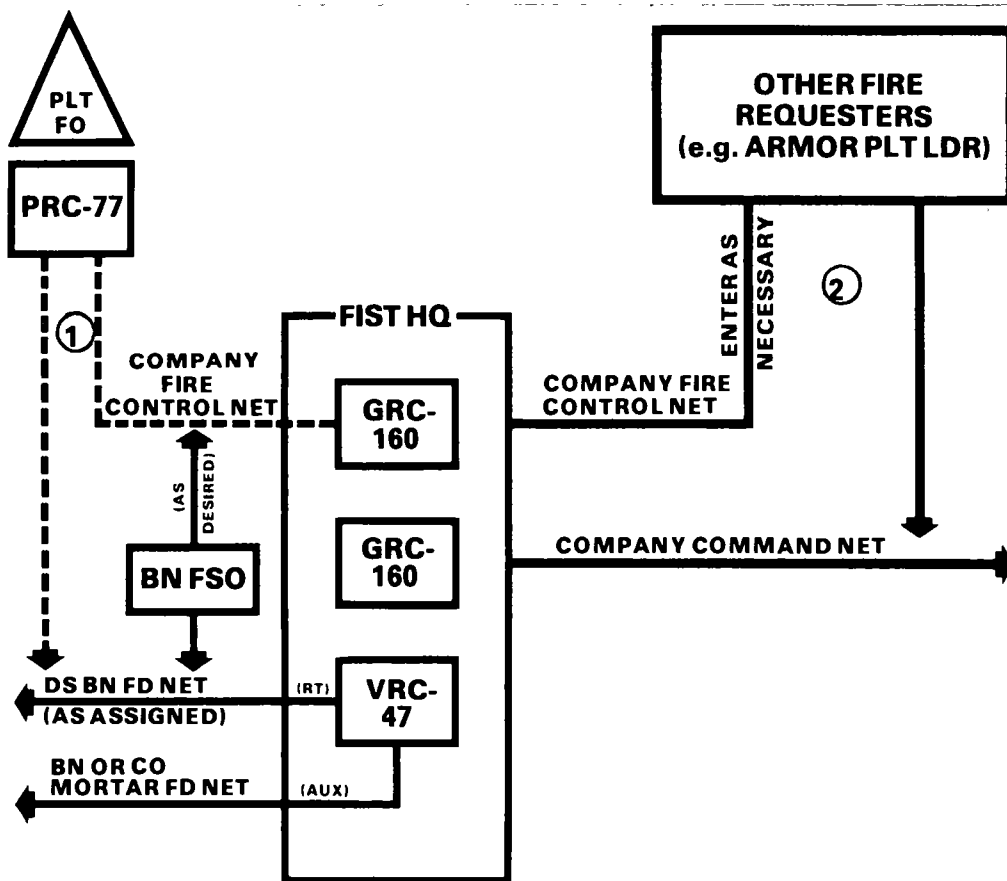


Figure I-33. Type mechanized infantry FIST radio nets.

① FIST headquarters may:

- predesignate FD net to be used by each FO; or
- assign FD net and FDC *after* coordination on company fire control net.

② Non-FA observers may request fire on either the company fire control net or the company command net; FIST headquarters may act as intermediary between requester and FDC or may direct requester onto selected FD net.

b. The channels established by the FIST headquarters are heavily influenced by the commander's guidance, unit SOP's, and the need to avoid premature exposure of F nets. While radio provides a highly flexible communications means, it is vulnerable to enemy electronic warfare measures. Field wire provides the alternative that is always used when time and the tactical situation permit installation of all or part of the necessary circuits.

c. At the company and battalion levels, these are the considerations for using the fire request channels.

□ The FIST chief or FO makes a judgment as to which fire support means can best attack the target. If FA is chosen, he determines if a battery can defeat the target or if a battalion is required. He then calls the appropriate FDC.

□ If the FIST chief determines that he needs a means other than the mortars or FA to which he has direct access, he sends the request to the FSO at the battalion FSE. Here the request is routed to the appropriate means through the request channels available to the FSO.

□ Counterfire targets are sent directly to the DS battalion FDC by FO's, FIST chiefs, and FSO's; the FDC will fire the target or immediately pass it to the division artillery TOC for attack.

□ The battalion FSO monitors fire requests and intercedes only when additional coordination is required.

1-29. Battalion-Level Fire Support Coordination and Request Channels

a. The FSO in the maneuver battalion

FSE receives requests for fires from the FIST chiefs under his supervision when the means available at company level are inadequate. The FSO also generates requirements for fire support through his own planning and in support of the battalion commander's needs. When the mission is received or generated, the FSO analyzes the target to determine how to attack and with which of the means available at his level.

b. When the heavy mortars of the battalion are selected, he assigns the mission direct to the mortar platoon FDC. The FSO insures that the mortar FDC and FIST chief or FO are on the same net, normally the battalion mortar FD net (fig I-34).

c. The selection of NGF or CAS to attack a target requires only a concise directive from the FSO to the NGLO or ALO available in the FSE. The NGLO communicates directly with supporting ships and the ALO communicates through the air-ground operations system with the attacking aircraft and control elements. A request for an immediate CAS mission is communicated by the ALO direct to the direct air support center (DASC) at corps. Intermediate headquarters (brigade FSE and division TAC FSE) monitor the request, acknowledge receipt, and intervene only to disapprove or amend the request. If the CAS strike is not required immediately, the request for fire will go through Army channels to the G2 air at corps. A complete discussion of the request channels for CAS is at appendix D of this manual.

d. Having tasked a specific means, the FSO coordinates the linkup of the attack means with the appropriate FIST, AO, FAC, or NGF spotter.

e. The FSO must coordinate with the appropriate fire support facility to attack outside the battalion boundaries or within

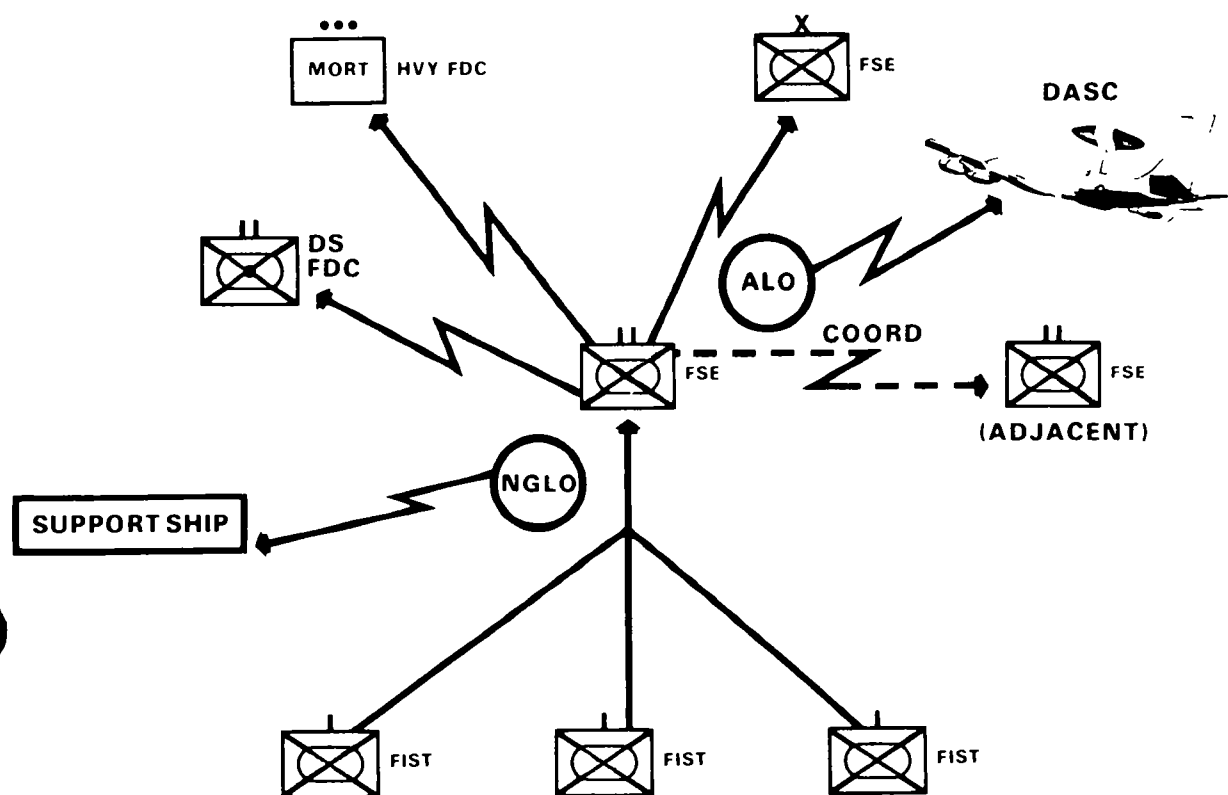


Figure I-34. Battalion-level coordination.

the constraints of some other coordinating measure.

f. The FSO will normally not be involved in coordinating additional FA fires for the companies; additional FA fires will be requested by the FA fire direction centers from the division artillery TOC. When the FSO generates a mission to be assigned to FA

he communicates with the DS battalion FDC over the CF net.

I-30. Brigade-Level Fire Support Coordination and Request Channels (fig I-35)

a. The brigade FSO receives requests for

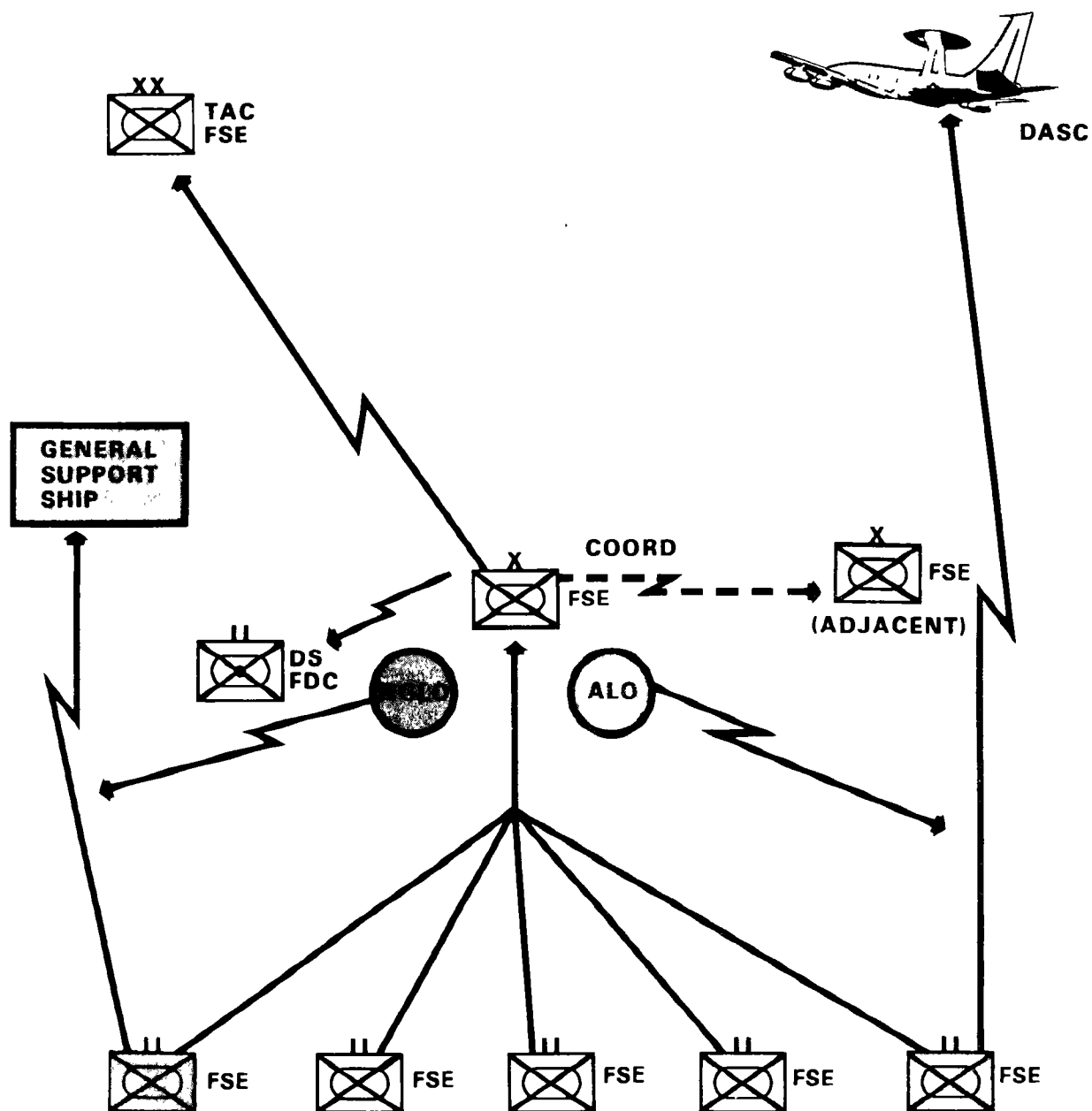


Figure I-35. Brigade-level coordination.

fire support from his battalion FSO s. Like the battalion FSO s, he generates fire support missions based on his own planning against targets of brigade interest. The brigade FSE has the same means available as does the battalion FSE; however, the brigade has access to greater allocations through its coordination and planning with the division TAC and MAIN FSE s over the division artillery CF net. When requests for support are received or generated, the FSO analyzes the target to determine how much and what type fire to apply.

b. The brigade FSE monitors all subordinate requests for immediate CAS, using the radios of the ALO. Silence is concurrence. If the FSO wants to cancel, amend, or substitute means, he directs the ALO to intervene in the request. Requests for preplanned CAS strikes are coordinated with the brigade S3 air before forwarding the requests through the TAC FSE to the MAIN FSE of the division.

c. The NGLO at the brigade FSE provides the FSO a direct link to ships supporting the brigade. Requests for support by additional ships are submitted by the FSO to the division TAC FSE (NGFO).

d. Should the FSO generate a target to be assigned to FA, he communicates directly with the DS FA battalion FDC.

e. Like the battalion FSO, the FSO at brigade must coordinate with other fire support facilities when the target is outside the brigade sector or zone or when coordinating measures restrict attack of the target.

b. When the brigade FSEs request preplanned CAS strikes, the requests will be consolidated at the TAC FSE and forwarded to MAIN FSE. The AFSCOORD, with the fighter liaison officer (FLO), will determine the best way to meet these competing demands while observing the commander's guidance. However, if a target is determined to be particularly dangerous to the division operation as a whole, the AFSCOORD may request more CAS from the corps FSE. The AFSCOORD will monitor all immediate CAS requests with the FLO's HF radio and follow the same procedures as the brigade FSO.

c. If a request for additional NGF support is received from any brigade, the AFSCOORD will direct the division NGFO to coordinate the mission with the general support ship. He will then insure that the requesting agency is linked up properly with the respective ship. The ANGLICO, the personnel framework to effect NGF, goes only as high as division level; therefore, there is no higher NGF support channel.

d. Coordination with adjacent and higher fire support coordinating facilities must be effected to enable firing of targets outside the division's boundaries.

e. If the AFSCOORD generates targets to be fired, he may use any of the means available within the FSE or division artillery. After the division artillery TOC has used all its organic, attached, and reinforcing

units, requests for added FA support are sent to the corps FSE through the MAIN FSE.

I-32. Corps Level

a. The corps main FSE is primarily concerned with the allocation of assets and becomes involved in responding to fire requests by tasking the assets retained at corps.

b. Corps will probably have all cannon FA brigades attached to divisions, or reinforcing the division artilleries. It will normally retain Lance missile battalions and brigades available to respond to requirements. FA assets (brigades) can be reallocated as the battle develops to support the changing needs of the divisions.

I-33. Counterfire Channels

The division artillery TOC is the facility responsible for the coordination of the division counterfire program. The division artillery TOC may initiate counterfire in response to a request for immediate counterfire or against lucrative, fleeting counterfire targets of opportunity. It may also initiate planned counterfire programs to suppress or destroy the enemy's artillery at the critical time and place.

a. Immediate Counterfire.

Any unit receiving incoming artillery, mortar, or rocket fires can request immediate counterfire from the FA. Requests should include:

<i>Identification</i>	72B56 THIS IS X2F7
<i>Warning Order</i>	IMMEDIATE COUNTERFIRE
<i>Type of Fire</i>	HEAVY MORTARS
<i>Direction of Source of Fire</i>	FROM NORTHWEST
<i>Severity of Fire</i>	RECEIVED 10-20 ROUNDS
<i>Area Shelled (grid)</i>	AB 147638

b. Channels (fig I-37).

Maneuver and FA units request counterfire through normal fire support/fire direction channels. Other combat support and combat service support units supporting maneuver units can request counterfire through the FSE's of the maneuver units. Other support units can request counterfire through their command channels. The request for counterfire is sent to the division artillery TOC and should be encoded using authorized brevity codes or—if possible—be sent by

secure voice equipment to prevent the enemy from learning the effectiveness of his fires. The division artillery TOC will immediately respond to the counterfire request with FA fires based on the guidance from the division commander concerning

- priority of fires,
- ammunition constraints, and
- survivability of our FA.

Simultaneously, the division artillery TOC may also request jamming and USAF close air support through the division TAC FSE.

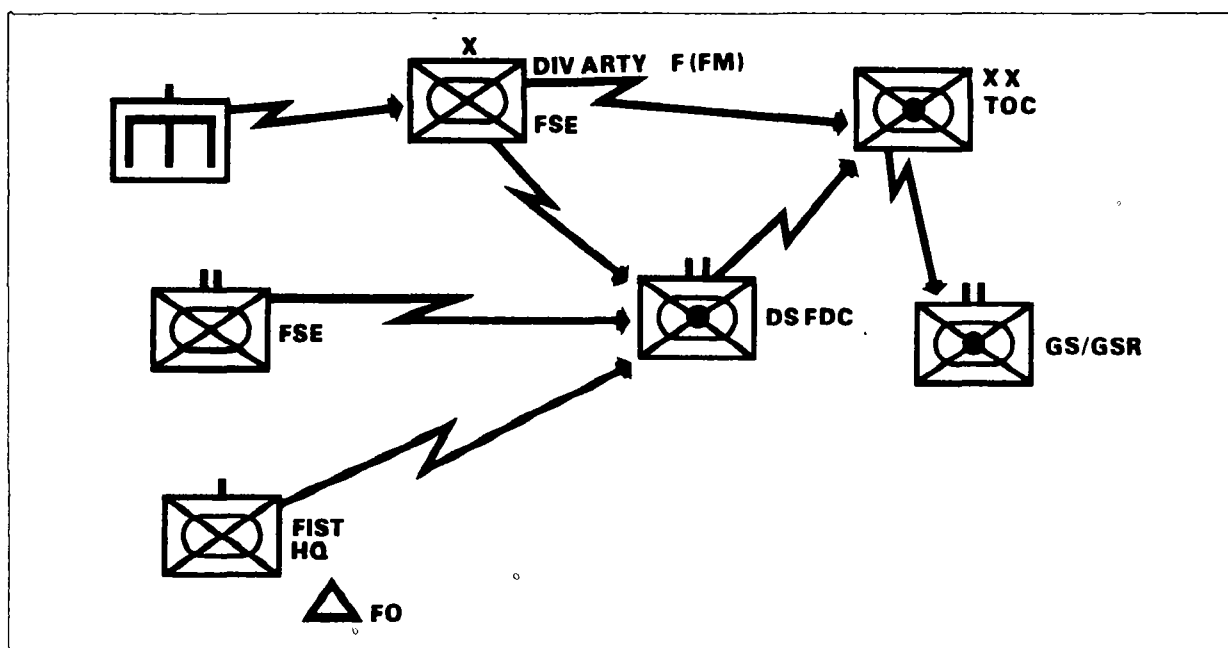


Figure I-37. Counterfire request channels.

I-34. Fire Support Coordination Measures

Fire support coordination measures serve as the guidelines that insure responsive and safe fire. Some coordination measures are designed primarily for maneuver operations; some to guide fire support execution; and some to meet the needs of *all* elements of the force. Coordination measures designate areas of the battlefield in which certain actions may or may not occur during a specified time. The measures are therefore

classified as permissive or restrictive. See appendix H of this manual for a complete definition of each measure and how each is established and disseminated.

a. Boundaries.

Boundaries are established by the force commander for a subordinate unit to define the zone of action for that unit (fig I-38). Boundaries assist in the control of fires as well as maneuver. Here are some examples of the use of boundaries for the control of fires: *TF1-12 Armor* can attack target *CA1002* with no further coordination needed. *REASON:*

The target is in the zone of action of TF 1-12. Before attacking target CA1012, the FSO with TF 1-12 must coordinate with the FSO with TF 1-13. *REASON:* Safety. The target is in the zone of an adjacent unit and should not be fired on until coordination is effected (there is no CFL in effect).

□ *TF 1-13 Armor* can attack target 101 with no added coordination needed because that target is in its zone of action. However, it cannot strike target CA1002 or CA1020

without first coordinating with the elements in whose zones they are located.

□ *TF 1-14 Armor* first coordinates with *brigade* before attacking target CA1020. *REASON:* The target is beyond the zone of action designated by the battalion's boundaries. The same situation would exist if TF 1-12 or TF 1-13 wanted to attack target CA1030 or XB1010; coordination must be effected with brigade for CA1030 and with division for XB1010 (XB1010 is outside the brigade zone).

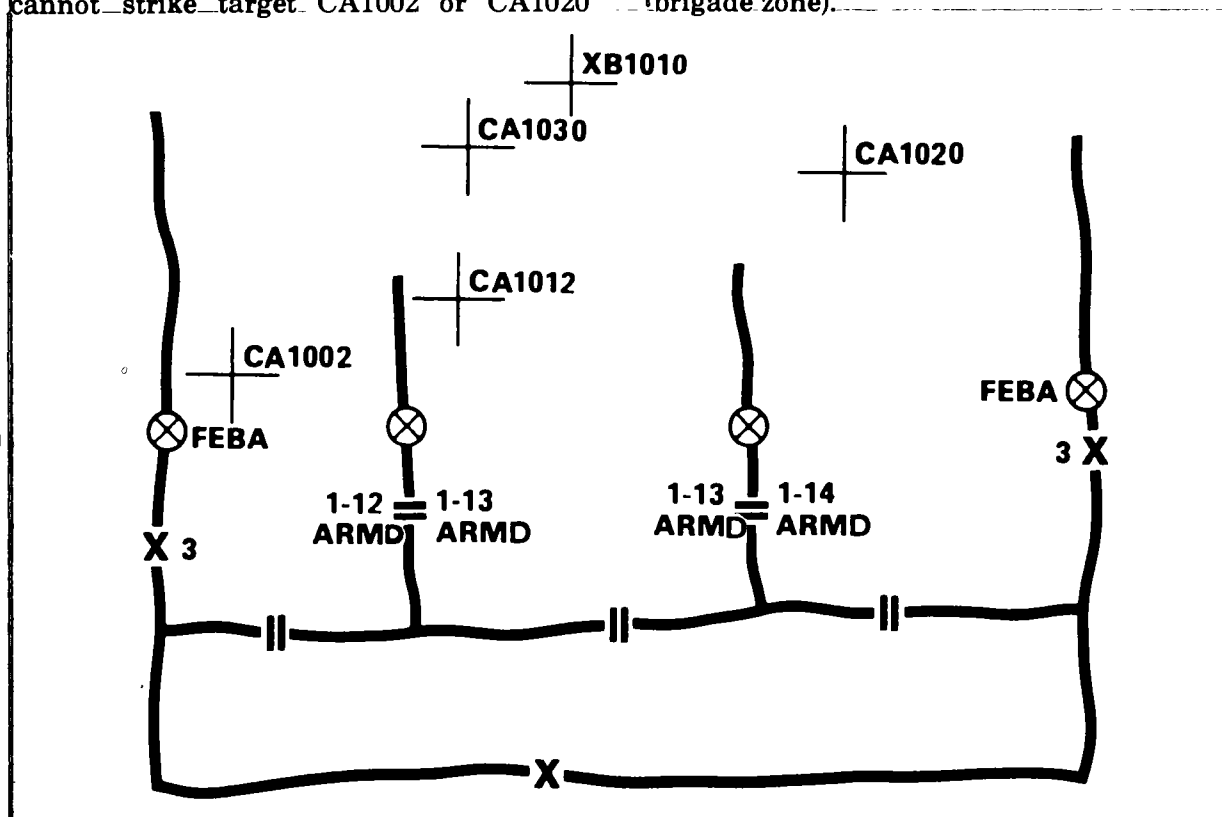


Figure I-38. Use of boundaries.

b. Permissive Measures.

(1) A *coordinated fire line (CFL)* is a line beyond which FA, NGF, and mortars can fire at any time *within the zone of the establishing headquarters* with no further need for coordination (fig I-39). It is designed to expedite fires across boundaries and to enhance rapid fire support reactions to

targets in those areas. Fires short of the CFL *do* require coordination. The CFL is usually established by brigades and divisions; occasionally, battalion TF's may require CFL's. The line is positioned commensurate with troop safety and the need for added and responsive fire support in zone. The CFL is portrayed as a dashed black line and this is how it is used:

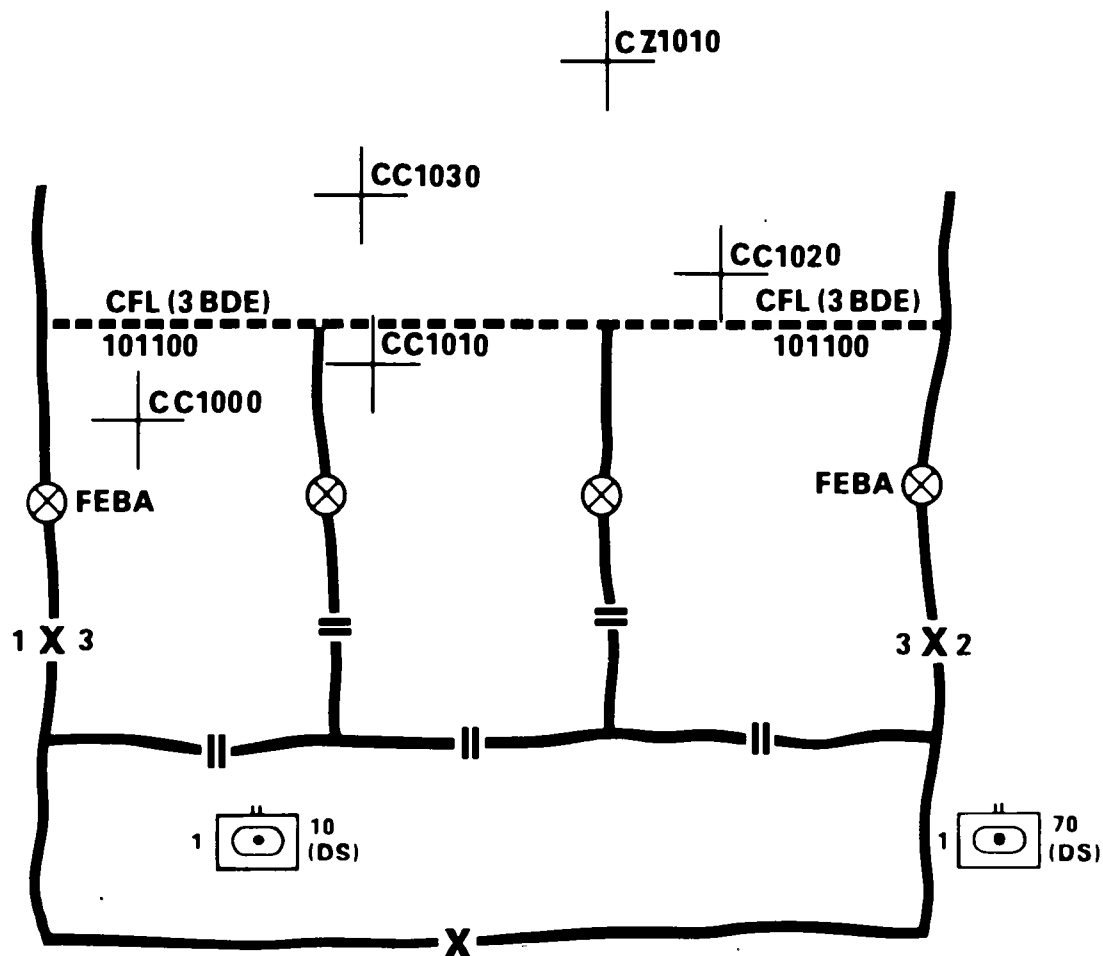


Figure I-39. Use of coordinated fire line.

□ The 1-10 FA (and any other surface-to-surface fire support means) can attack targets CC1020 and CC1030 without further coordination of the fires. *REASON:* Both are in the zone of action of the supported unit and are *beyond* the CFL established by the 3d Brigade. Targets CC1002 and CC1010 were planned by 3d Brigade but cannot be attacked by surface-to-surface *indirect* fire unless coordination is effected with the FSO at the FSE of the respective battalion.

□ The 1-70 FA can also attack targets CC1020 and CC 1030 without further coordination. *REASON:* The target is beyond the CFL and is within the zone of the brigade that established the CFL. It should not attack CZ1010 unless that target is coordinated with the division FSE because

the target is outside the zone of the 3d Brigade.

□ CAS cannot attack any of these targets without coordination because the CFL pertains only to the control of surface-to-surface fires.

(2) The *fire support coordination line* (FSCL) (fig I-40) is a line beyond which all targets may be attacked by *any* weapon system without danger to friendly troops or additional coordination with the establishing headquarters. This expedites the attack of targets. The FSCL is established by the force commander (normally corps). It applies to all types of fire support ammunition and its effects. It is located on terrain identifiable from the air and is portrayed by a solid black line.

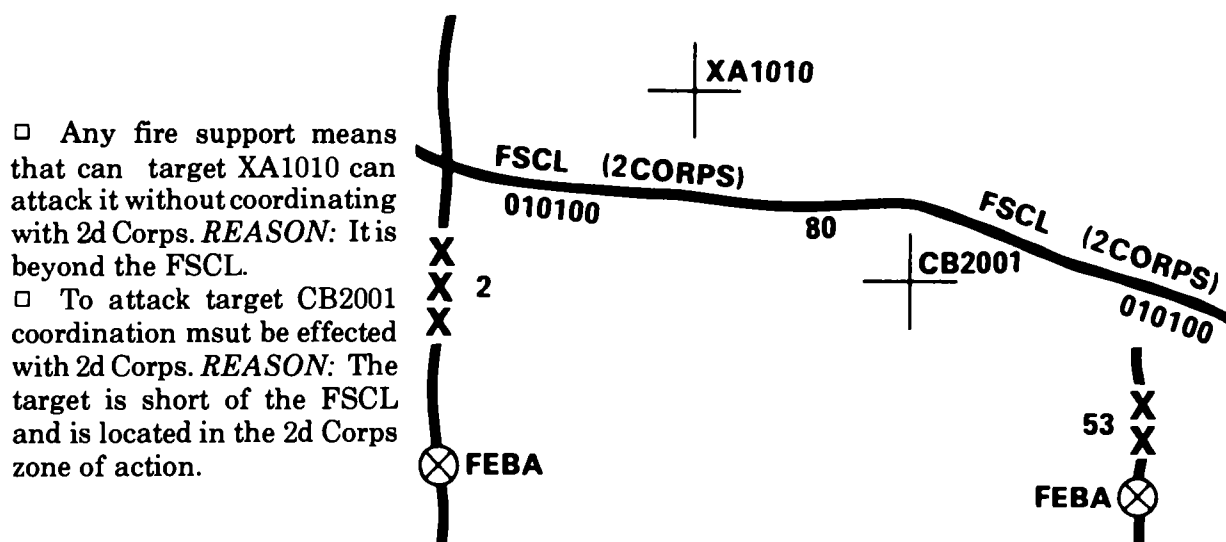


Figure I-40. Fire support coordination line.

(3) A *free-fire area (FFA)* (fig I-41) is an area into which any fire support means may deliver fires without coordination. This speeds reaction to targets in the FFA. It can be used for an area where neutralization by fire support is preferred to the use of maneuver forces or where friendly aircraft can jettison ammunition. The FFA is normally designated by a division or corps commander following coordination with the civilian authority in the area. The FFA applies to conventional fire support. It is delineated by prominent terrain features if possible. If not, grids may be used. The FFA is outlined in black with the abbreviation "FFA," the establishing headquarters, and the DTG shown.

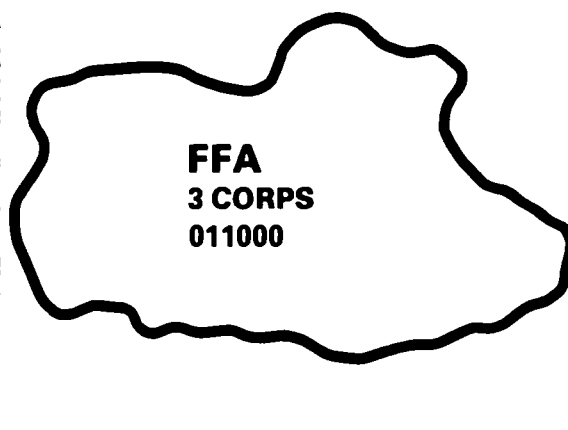


Figure I-41. Free-fire area.

c. Restrictive Measures.

(1) A *restrictive fire line (RFL)* (fig I-42) is a line established between two converging friendly forces and across which fires and their effects cannot extend without prior coordination with the affected force. The RFL is established by the commander common to both forces and applies to all types of ammunition and fires. It is

positioned on identifiable terrain to facilitate recognition. When practical and appropriate, it is located closest to the stationary force to give more freedom to the moving force. On maps and overlays, the RFL is shown as a solid red line. In this example, the 10th Armored Brigade cannot fire beyond Highway 70 after 101000 without coordination with airborne brigade.

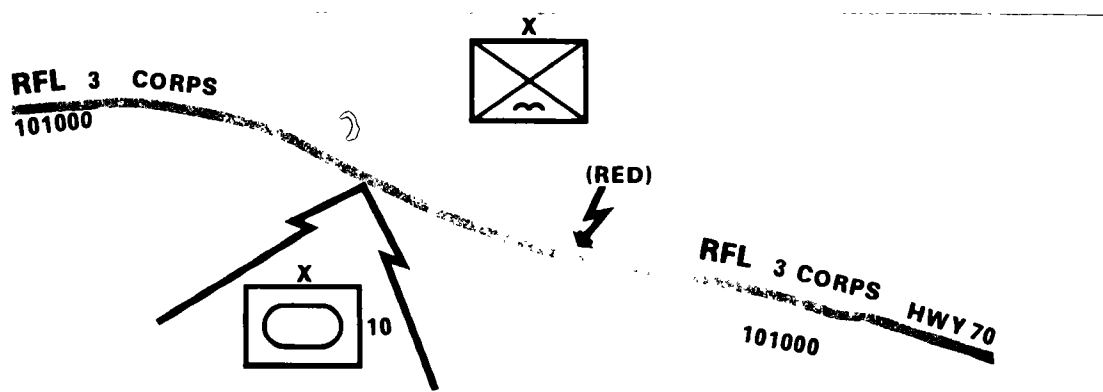


Figure I-42. Restrictive fire line.

(2) The *restrictive fire area (RFA)* (fig I-43) establishes constraints on fire support. Fires and/or their effects in excess of these constraints must be cleared with the establishing headquarters (battalion or higher). The RFA applies to conventional ammunition outside the constraints imposed. It is desirable that the RFA be located on identifiable terrain; however it can be stated as a radius from a center point or by grid designation. It is displayed within a solid red line with "RFA," the establishing headquarters, the DTG, and the reference that explains the restrictions. Use of an

RFA places control (regulation) of fires in the specified area with the establishing headquarters.

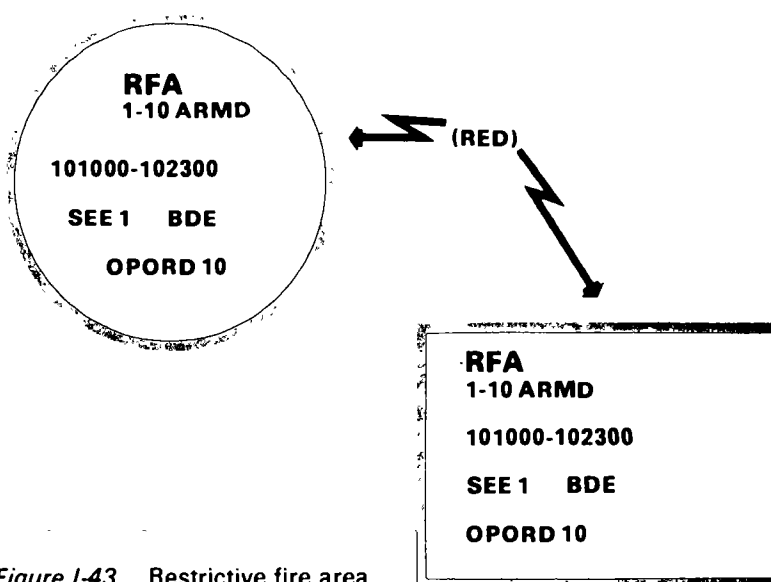


Figure I-43. Restrictive fire area.

(3) The *no-fire area (NFA)* (fig I-44) is a designated area into which neither fires nor effects from fires will occur. Two exceptions are, if:

- the establishing headquarters asks for or approves fires, or
- an enemy force takes refuge in the area, poses a major threat, and there is insufficient time to clear the fires needed to defend the friendly force.

The NFA is normally established by a division or corps commander. It is located on identifiable terrain, if possible. It may be designated by a center point and radius or the

use of grids. It is drawn on maps, charts, and overlays with a solid red line. Red diagonal lines are shaded in the area. The abbreviation, "NFA," the establishing headquarters, and the effective DTG's for the period are shown.

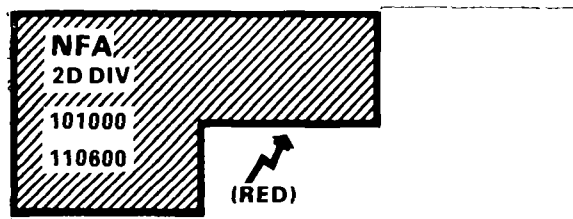


Figure I-44. No-fire area.

(4) The *airspace coordination area (ACA)* (fig I-45) is a block of airspace in the target area in which friendly aircraft are reasonably safe from friendly surface fires. It may occasionally be a formal measure—a

three-dimensional "box in the sky." Most likely, it will be informal; e.g., "Keep the FA north of Blue Beaver Creek, CAS to the south."

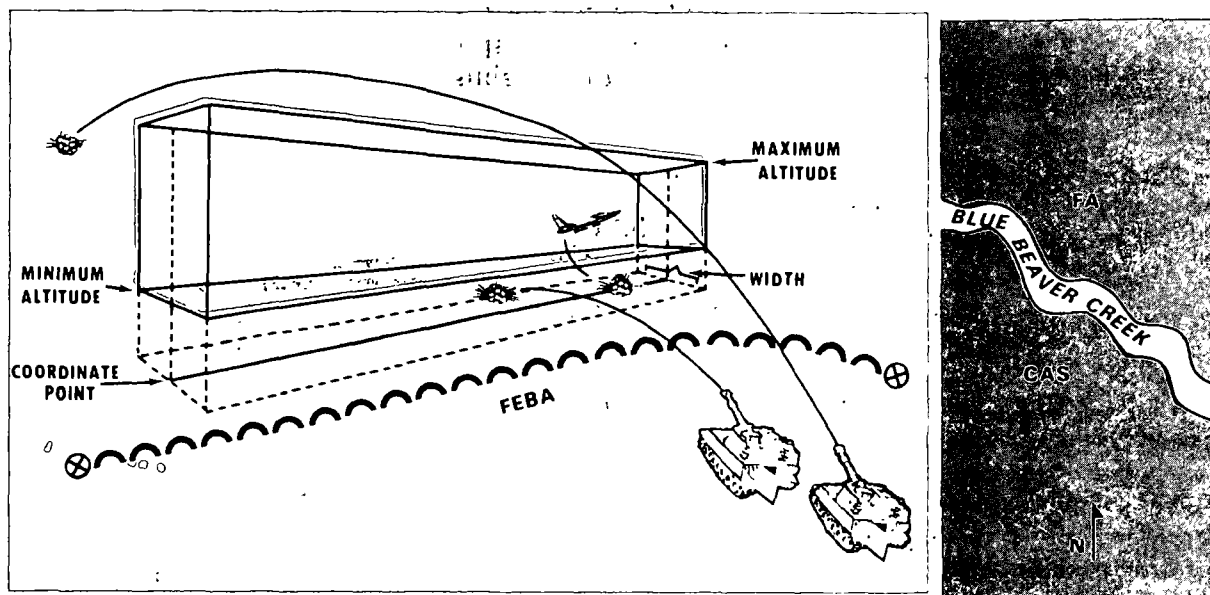


Figure I-45. Airspace coordination area.

TAB A to Appendix I: Example-Division OPORD

Note. This example depicts an OPORD in which the fire support plan in paragraph 3 is complete and *does not* require amplification in a fire support annex.

(Classification)

Copy no 3 of 50 copies
52 Mech Div
Zebro (CX600065), MONROVIA
280001 August
AB 101

OPORD ____.

Reference: Map series JWS 123 MONROVIA, sheet 1 (LODE-VEIN) edition 69-DMG,
1:50,000

Time Zone Used: ZULU

Task Organization:

1 Bde
TF 1-5
TF 1-77
TF 1-78
1-14 Cav
1-40 FA (155 SP) (DS)

Div Arty
1-43 FA (8 SP)
2-606 FA (8 SP)
2-607 FA (8 SP)
2-631 FA (155 SP)
2-661 FA (8 SP)
HHB, 61 FA Bde
Btry E (TA), 26 FA

2 Bde
TF 1-3
TF 1-4
1-23 Cav
2-14 Cav
1-41 FA (155 SP) (DS)

Div Trp
TF 1-81
TF 1-82
1-441 ADA (C/V)
* * *

3 Bde
TF 1-2
TF 1-79
TF 1-80
1-42 FA (155 SP) (DS)

DISCOM
* * *

(Classification)

(Classification)

1. SITUATIONa. Enemy Forces. Annex A (Intelligence).b. Friendly Forces.

(1) 3 Corps defends in zone with three divisions on line: 40 Armd Div in the north; 52 Mech Div in the center; 53 Mech Div in the south.

(2) Divisions establish their own covering force.

(3) 7 TAF supports 3 Corps with 150 CAS sorties daily during the period 30 Aug to 6 Sep. Priority to 52 Mech Div.

(4) FA Support.

101 FA Bde (Lance): GS 3 Corps.

(5) NGF Support. Fire Support Unit (TU 36.10) supports 52 Mech Div.

c. Attachments and Detachments.

(1) 1 Aug task organization.

(2) 61 FA Bde atchd eff 290100 Aug.

(3) 1-14 and 2-14 Cav atchd eff 291200 Aug.

2. MISSION

Div establish covering force along the international border and defend in sector from DX100320 to EX490050 NLT 311200 Aug.

3. EXECUTIONa. Concept of Operation. Annex B (Operation Overlay).

(1) Maneuver. Div deploys covering force with bdes controlling covering force in sector. Div occupies MBA with three bdes abreast:

(Classification)

(Classification)

1 Bde in the north, 2 Bde in the center, 3 Bde in the south. Div defends MBA in sector stopping enemy forward of bde rear boundary. Div Res (TF 1-81, TF 1-82) be prepared for commitment in area of 2 Bde and 3 Bde in priority.

(2) Fires. Priority for fire support initially to 2 Bde. Brigades plan a 10-minute conventional counterpreparation for the MBA (para 3e, Fire Spt).

b. 1 Bde: omitted

c. 2 Bde:

(1) Establish covering force in battle area.

(2) Defend in battle area.

(3) Deny free access to COLUMBO.

d. 3 Bde: omitted

e. Fire Support:

(1) Chemical Support. See Annex E, Chemical Support Plan.

(2) Close Air Support (daily).

(a) General.

1. Corps has 150 sorties daily, pd 30 Aug-6 Sep.

2. Eighty sorties to div daily (for planning).

3. Priority of fires initially to 2 Bde.

(Classification)

(Classification)

(b) Daily allocation of sorties (for planning).

1. 1 Bde: 12.

2. 2 Bde: 28.

3. 3 Bde: 12.

(c) Special Instructions.

1. Unexpended ordnance will be jettisoned into division FFAs (See Annex B-OPN overlay). Coord with div tac FSE.

2. Plan 4 sorties per target.

(3) FA.

(a) General.

1. Priority of fires initially to 2 Bde.

2. Counter priorities. In order, enemy mortars and FA affecting CFA, then MBA by current SOP.

(b) Organization for Combat.

1-40 FA (155 SP): DS 1 Bde.

1-41 FA (155 SP): DS 2 Bde.

1-42 FA (155 SP): DS 3 Bde.

1-43 FA (8 SP): Reinf 1-41 FA.

2-606 FA (8 SP): GSR 1-40 FA.

2-607 FA (8 SP): GSR 1-42 FA.

2-631 FA (155 SP): GSR 1-41 FA.

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2-661 FA (8 SP): GS.

HHB, 61 FA Bde: div arty alt.

Btry E (TA), 26 FA: GS.

(c) Special Instructions.

1. 2-606 FA. Do not exceed 50% of CSR reinf 1-40 FA.
2. Priority of positions to 1-43 FA and 2-631 FA in order.
3. 1-41 FA plan fires of 2-631 FA for counter-preparation only.
4. During covering force operation, reinforced units have first priority on fires of GSR FA battalions.

(4) NGF Support.

(a) General.

1. TU 36.10 supports 52 Mech Div with 2 ships.
2. Priority of fires initially to 2 Bde.

(b) Allocation.

CA 78 (cruiser): GS.

DD 856 (Destroyer): DS 2 Bde.

(c) Special Instructions.

1. NGFO and NGLOs report to div main FSE NLT 280915 Aug.
2. Report ammo status twice daily at 0800 and 1600 hours.

(5) Nuclear Support. See Annex D, Nuclear Support Plan.

(Classification)

(Classification)

(6) Coordinating Instructions.

(a) Bde FSEs plan 10-min conventional counterpreparation for the MBA. Distribute schedules to participants NLT 310600 Aug.

(b) 3 Corps FSCL is MOON RIVER, eff 301600 Aug.

(c) On order, Div CFL--from DX306609 to EX660265.

f. Air Defense Artillery:

g. Engineer:

h. Div Trp:

i. Discom:

j. Res: TF 1-81 and TF 1-82. Be prepared for commitment in area of 2 Bde and 3 Bde, in priority.

k. Coordinating Instructions:

(1) Bdes be prepared to release unengaged units.

(2) Bdes be prepared to receive attachment of units.

4. SERVICE SUPPORT (omitted)

5. COMMAND AND SIGNAL (omitted)

Acknowledge

MONTGOMERY
MG

OFFICIAL:

/s/Stinson
STINSON

ANNEXES: A-Intelligence (omitted)
B-Operation Overlay (omitted)
C-Nuclear Support Plan (TBP)

(Classification)

(Classification)

D-Chemical Support Plan (TBP)
E-Aviation (omitted)
F-Engineer (omitted)
G-Service Support (omitted)
H-Communications-Electronics (omitted)

Distribution: B

(Classification)



TAB B to Appendix I: Example-Division OPORD

Note. This example depicts an OPORD for which the force operations officer and FSCoord have agreed to publish a fire support annex. This OPORD is the same as the previous example (tab A) except the information in paragraph 3 for fire support is more limited and is amplified by the fire support annex.

(Classification)

Copy no 3 of 50 copies
 52 Mech Div
 Zebro (CX600065), MONROVIA
 280001 August
 AB101

OPORD 21

Reference: Map Series JWS 123 MONROVIA, sheet 1 (LODE-VEIN) edition 69-DMG,
 1:50,000

Time Zone Used: ZULU

Task Organization:

1 Bde
 TF 1-5
 TF 1-77
 TF 1-78
 1-14 Cav
 1-40 FA (155 SP) (DS)

Div Arty
 1-43 FA (8 SP)
 2-606 FA (8 SP)
 2-607 FA (8 SP)
 2-631 FA (155 SP)
 1-661 FA (8 SP)
 HHB, 61 FA Bde
 Btry E (TA), 26 FA

2 Bde
 TF 1-3
 TF 1-4
 2-14 Cav
 1-41 FA (155 SP) (DS)

Div Trp
 TF 1-81
 TF 1-82
 1-441 ADA (C/V)
 * * *

3 Bde
 TF 1-2
 TF 1-79
 TF 1-80
 1-42 FA (155 SP) (DS)

DISCOM
 * * *

(Classification)

(Classification)

1. SITUATIONa. Enemy Forces. Annex A (Intelligence).b. Friendly Forces.

(1) 3 Corps defends in zone with three divisions on line: 40 Armd Div in the north; 52 Mech Div in the center; 53 Mech Div in the south.

(2) Divisions establish their own covering force.

(3) 7 TAF supports 3 Corps with 150 CAS sorties daily during the period 30 Aug to 6 Sep. Priority to 52 Mech Div.

(4) FA support.

101 FA Bde (Lance): GS 3 Corps.

(5) NGF support. Fire Support Unit (TU 36.10) supports 53 Mech Div.

c. Attachments and Detachments.

(1) 1 Aug task organization.

(2) 61 FA Bde atch eff 290100 Aug.

(3) 1-14 and 2-14 Cav atch eff 291200 Aug.

2. MISSION

Div establish covering force along the international border, and defend the sector from DX100320 to EX490050 NLT 311200 Aug.

3. EXECUTION

(Classification)

(Classification)

a. Concept of Operation. Annex B (Operation Overlay).

(1) Maneuver. Division deploys covering force with bdes controlling covering force in sector. Div occupies MBA with three bdes abreast: 1 Bde in the north, 2 Bde in the center, 3 Bde in the south. Division defends MBA in sector stopping enemy forward of brigade rear boundary. Div Res (TF 1-81, TF 1-82) be prepared for commitment in area of 2 Bde and 3 Bde in priority.

(2) Fires. Priority of fire support initially to 2 Bde. Bdes plan a 10-minute conventional counterpreparation for the MBA (para 3e, Fire Spt).

b. 1 Bde: omitted.

c. 2 Bde:

(1) Establish covering force in battle area.

(2) Defend in battle area.

(3) Deny free access to COLUMBO.

d. 3 Bde: omitted.

e. Fire Support:

(1) Chemical Support. See App 1 (Chemical Support Plan), Annex C (Fire Support Plan).

(Classification)

(Classification)

(2) Close Air Support.

(a) Daily Sortie Allocation (For Planning):

1 1 Bde - 12.

2 2 Bde - 28.

3 3 Bde - 12.

(b) See App 2 (CAS Plan), Annex C (Fire Support Plan).

(3) FA Support.

(a) Organization for Combat.

1-40 FA (155 SP): DS 1 Bde.

1-41 FA (155 SP): DS 2 Bde.

1-42 FA (155 SP): DS 3 Bde.

1-43 FA (8 SP): R 1-41 FA.

2-606 FA (8 SP): GSR 1-40 FA.

2-607 FA (8 SP): GSR 1-42 FA.

2-631 FA (155 SP): GSR 1-41 FA.

2-661 FA (8 SP): GS.

HQB, 61 FA Bde: Div arty alt.

Btry E (TA), 26 FA: GS.

(b) See App 3 (FA Support Plan), Annex C (Fire Support Plan).

(4) Naval Gunfire Support.

(a) Allocation:

CA 78 (Cruiser): GS.

DD 856 (Destroyer): DS 2 Bde.

(Classification)

(Classification)

(b) See App 4 (NGF Support Plan), Annex C (Fire Support Plan).

(5) Nuclear Support. See App 5 (Nuclear Support Plan), Annex C (Fire Support Plan).

(6) Coordinating Instructions. See Annex C (Fire Support Plan).

f. Air Defense Artillery:

g. Engineer:

h. Div Trp:

(Classification)

(Classification)

1. Discom:

j. Res: TF 1-81 and TF 1-82. Be prepared for commitment in area of 2 Bde and 3 Bde, in priority.

k. Coordinating Instructions:

(1) Bdes be prepared to release unengaged units.

(2) Bdes be prepared to receive attachment of units.

4. SERVICE SUPPORT (Omitted)

5. COMMAND AND SIGNAL (Omitted)

Acknowledge

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MG

OFFICIAL:

/s/Stinson
STINSON

ANNEXES: A-Intelligence (omitted)
B-Operations Overlay (omitted)
C-Fire Support
D-Aviation (omitted)
E-Engineer (omitted)
F-Service Support (omitted)
G-Communications-Electronics (omitted)

Distribution: B

(Classification)

TAB C to Appendix I: Example-Fire Support Annex to Division OPORD

Note. This example depicts a fire support annex to support an OPORD in which the information in paragraph 3 for fire support has been limited. This annex supports the sample division OPORD shown at tab B. The fire support annex is an integral part of the OPORD and is issued with the OPORD.

(Classification)

Copy no 3 of 50 copies
52 Mech Div
Zebro (CX600065), MONROVIA
280001 August
AB 101

ANNEX C (FIRE SUPPORT) TO OPORD ____.

Reference: Map Series JWS 123 MONROVIA, sheet 1 (LODE-VEIN) edition 60-DMG,
1:50,000

Time Zone Used: ZULU

1. SITUATION.

a. Enemy Forces.

- (1) Annex ____ (Intelligence) to OPORD.
- (2) Enemy air has capability of 100 sorties daily in 3 corps zone.

b. Friendly Forces.

- (1) Corps defends in zone using 3 divisions on line with 40 Armd Div in North; 52 Mech Div in center; 53 Mech Div in South.
- (2) Divisions provide fire support to own covering forces.
- (3) 7 TAF provides CAS to 3 corps. Priority of spt to 52 Mech Div initially.
- (4) FA support: 101 FA Bde (Lance; GS 3 corps).
- (5) NGF support: FSU 36.10 spts 52 Mech Div with 1 cruiser and 1 destroyer.

(Classification)

(Classification)

c. Attachments/Detachments. See task org for ____ Aug.

2. **MISSION.** Fire support agencies provide conventional, nuclear, and chemical fires in support of the defense. Bde FSEs plan 10 minute conventional counterpreparation for MBA.

3. **EXECUTION.**

a. **Concept of Operation.** See OPORD.

b. **Chemical Support.**

(1) **General.** See App 1 (Chemical Support Plan).

(2) **PCL.**

	<u>155-mm</u>		<u>8-in</u>	
	<u>GB</u>	<u>VX</u>	<u>GB</u>	<u>VX</u>
1-40 FA	83	41		
1-41 FA	84	43		
1-42 FA	83	41		
1-43 FA			40	14
2-606 FA			30	11
2-607 FA			30	8
2-631 FA	100	100		

c. **Close Air.**

(1) General.

(a) See App 2 (Close Air Support Plan).

(b) Corps has 150 sorties daily (for planning purposes)
pd 30 Aug - 6 Sep.

(c) Eighty sorties allotted daily to 52 Bde initially.

(2) **Daily Sortie Allocation (for planning):**

(a) 1 Bde: 12.

(b) 2 Bde: 28.

(c) 3 Bde: 12.

(Classification)

(Classification)

d. FA Support.

(1) General.

- (a) Priority of fires initially to 2 Bde.
- (b) Counterfire priorities (in order):
 - 1. Enemy mortars and FA affecting CFA forces.
 - 2. Enemy indirect-fire weapons affecting MBA forces.

(2) Org for Combat:

1-40 FA (155 SP): DS 1 Bde.
1-41 FA (155 SP): DS 2 Bde.
1-42 FA (155 SP): DS 3 Bde.
1-43 FA (8 SP): R 1-41 FA.
2-606 FA (8 SP): GSR 1-40 FA.
2-607 FA (8 SP): GSR 1-42 FA.
2-631 FA (155 SP): GSR 1-41 FA.
2-661 FA (8 SP): GS.
HHB, 61 FA Bde: div arty alt.
Btry E (TA), 26 FA: GS.

(3) Coordinating Instructions. See App 3 (FA Support Plan).

(4) NGF Support.

(a) General.

- 1. TU 36.10 supports with 2 ships.
- 2. Priority for fires initially to 2 Bde.

(b) Organization.

- 1. CA 78 (Cruiser): GS.
- 2. DD 856 (Destroyer): DS 2 Bde.

(c) Special Instructions. See App 4 (NGF Support Plan).

(5) Nuclear Support.

(Classification)

(Classification)

(a) General. Apportionment of subpackages, constraints, and lists of aimpoints. See App 5 (Nuclear Support Plan).

(b) PNL (Yields shown are hypothetical).

	<u>155-mm</u>		<u>8-in</u>	
	<u>0.1 KT</u>	<u>0.5 KT</u>	<u>0.5 KT</u>	<u>5.0 KT</u>
1-40 FA	8	8		
1-41 FA	9	11		
1-42 FA	8	6		
2-606 FA			8	8
2-607 FA			7	8
2-631		10		

(6) Coordinating Instructions.

(a) Bde FSEs plan 10 min counterprep for MBA. Distribute schedules to participants NLT 310600 Aug.

(b) 3 corps FSCL is MOON RIVER, eff 301800 Aug.

(c) On order, Div CFL runs from DX306609 to EX660265.

4. SERVICE SUPPORT.

a. General. See Annex H (Service Support) to OPORD ____.

b. ASP Locations:

(1) ASP 10: CX972651.

(2) ASP 11: CX120613.

c. SASP Location: CX970650.

d. Ammo Resupply: Per div SOP.

5. COMMAND AND SIGNAL.

a. Signal.

(1) Index 1-66 CEOI eff 292300 Aug.

(2) See Annex I (Communications-Electronics) OPORD ____.

(Classification)

(Classification)

b. Command.

- (1) Main FSE: CX600065.
- (2) Tac FSE: To be announced.
- (3) Div arty TOC: CX590055.

Acknowledge

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Appendixes: 1-Chemical Support Plan
 2-Close Air Support Plan
 3-FA Support Plan
 4-Naval Gunfire Support Plan
 5-Nuclear Support Plan

Distribution B

(Classification)



TAB D to Appendix I: Example-FA Support Plan

Note. This example depicts an FA support plan, an independent document prepared by the FA operations officer to support a fire support plan presented in a force OPORD. The FA support plan is distributed directly to executing FA units through FA channels. The FA support plan is *not* part of the force OPORD. An information copy should be sent to the force FSCoord. The example shown here *has no relation* to the OPORD's in tabs A and B.

(Classification)

Copy no 2 of 20 copies
Hq 53 Mech Div
Totina (WLO36670), MONROVIA
052100 May
XY 202

Appendix 3, FA Support Plan to Annex _____
Fire Support Plan, to OPORD _____

Reference: Map Series JWT 128 MONROVIA, sheet 3 (DURIEN) edition 2-DMG,
1:50,000

Time Zone Used: ZULU

1. SITUATION.

a. Enemy Forces.

- (1) Div arty INTSUM 5-5.
- (2) Enemy is capable of attacking fire support means with air-, missile-, and cannon-delivered nuclear weapons.
- (3) Enemy is capable of 150 fighter-bomber sorties per day in the corps zone.
- (4) All calibers of artillery have been identified within the past 24 hours to include MRL and mortars. The 122-mm how is the most predominant caliber located thus far.

(Classification)

(Classification)

(5) Enemy forces employing sound and flas simulators and decoy positions.

b. Friendly Forces.

(1) 3 Corps attacks 060600 May w/53 Mech Div in north and 52 Mech Div in south to secure crossings over the RAMUZZA RIVER, and destroys enemy in zone.

(2) 9 TAF supports 3 Corps with 150 CAS sorties per day for the period 060600 to 072400 May. Priority to 53 Mech Div.

(3) Attachments & Detachments: 102 FA Bde attached eff 060100 May.

2. MISSION.

FA supports division attack with 20-minute preparation (conventional) commencing at H-15 minutes, with close and general support fires, and counterfire throughout the operation.

3. EXECUTION.

a. Priority of FA Fires. Initially to 1 Bde.

b. Organization for Combat.

1-10 FA (155 SP): DS 1 Bde.

1-11 FA (155 SP): DS 2 Bde.

1-12 FA (155 SP): GSR 1-10 FA; o/o DS 3 Bde.

1-13 FA (8 SP): GSR 1-10 FA.

1-70 (8 SP): R 1-10 FA.

2-71 FA (8 SP): R 1-11 FA.

1-123 FA (155 SP): GS.

(Classification)

(Classification)

1-124 FA (155 SP): GSR 1-11 FA.

1-125 FA (8 SP): GS.

HNB, 102 FA Bde: Div arty alternate.

Btry E (TA) 26 FA: GS.

c. Target Acquisition. See Inclosure 1 (Target Acquisition).

d. Meteorology. Met section, HNB, 102 FA Bde: attached 1-10 FA.

Provide ballistic and computer messages in 1 Bde zone operations.

e. Special Instructions.

(1) Target Casualty Criteria: 3 percent for defensive posture tgts;
5 percent for offensive posture tgts.

(2) DS bns attack all mortars as required.

f. Counterfire Matrix Code. Lower left is Bravo Foxtrot at grid UL7001.

g. Targets. See Inclosure 2 (Target List).

h. Schedules. See Inclosures 3 and 4 (Schedules).

4. SERVICE SUPPORT.

a. CSR: 052400 May--071200 May.

	HE	ICM (AP)	ICM (DP)	WP	ILL	HCBE
155-mm	90	25	40	20	10	10
8-in	130	20	30			

b. ASP/SASP Locations.

ASP 10 (811 090) SASP 101 (801 094)

ASP 11 (900 081) SASP 102 (906 073)

(Classification)

(Classification)

5. COMMAND AND SIGNAL.

a. Signal. Div CEOI Index 1-10 applies.

b. Command.

(1) Div arty TOC - 254823.

(2) Tac FSE - to be announced.

(3) Main FSE - 036670.

Acknowledge

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/s/Schreyach
SCHREYACH
S3

Inclosures: 1 - Target Acquisition
 2 - Target List.
 3 - Preparation Schedule.
 4 - Schedules Groups of Targets.

Distribution: C

(Classification)

(Classification)

Incl 1 (Tgt Acq) to App ____ (FA Spt Plan) to Annex ____
(Fire Support) to OPORD ____.

Reference: Map Series JWT 128 MONROVIA, sheet 3 (DURIEN) edition 2-DMG,
1:50,000

Time Zone Used: ZULU

1. PROCESSING

Counterfire targeting information will be passed between the 102 FA Bde and the div arty TOC.

2. VISUAL OBSERVATION

a. Ground Observation. See capabilities overlay at tab 1 (omitted).

b. Air Observation.

(1) Four aerial observers will maintain on-call, 24-hour surveillance on the division's right flank.

(2) Four aerial observers 102 FA Bde, OPCON div arty.

3. RADAR, SOUND/FLASH

a. Radar.

(1) AN/TPS-25A. Section 6, E/1-26 FA (TA): Attached to 1-11 FA. Primary sector of search: road network from grid _____ to _____. Use of radar restricted to times of darkness or during periods when direct observation denied.

(2) AN/MPQ-4A:

(a) Section 1, E/1-26 FA (TA): Attached 1-10 FA. Primary sector of search ctrfire ref grid (CRG) _____.

(b) Section 2, E/1-26 FA (TA): Attached 1-10 FA. Primary sector of search CRG _____.

(Classification)

(c) Section 3, E/1-26 FA (TA): Attached 1-11 FA. Primary sector of search CRG _____.

(d) Section 4, E/1-26 FA (TA): OPCON 1 Plt (S/F) FA. Primary sector of search CRG _____.

(e) Section 5, E/1-26 FA (TA): OPCON 2 Plt (S/F) FA. Primary sector of search CRG _____.

b. Sound/Flash.

(1) 1 Platoon (S/F), E/1-26 FA (TA): Establish bases in 1 Bde zone. Primary sector of search, enemy artillery in CRG _____, _____, and _____.

(2) 2 Platoon (S/F), E/1-26 FA (TA): Establish bases in 2 Bde zone. Primary sector of search CRG _____, _____, and _____.

4. COORDINATION

Direct support battalions provide survey for radar/sound and flash/CEWI detachments in their zone of operation.

TAB 1: Capabilities Overlay (omitted)

(Classification)

(Classification)

Incl 1 (Tgt Acq) to App ____ (FA Spt Plan) to ANNEX ____
 (Fire Support) to OPORD ____.

Reference: Map Series JWT 128 MONROVIA, sheet 3 (DURIEN) edition 22-DMG
 1:50,000

<u>Line No</u>	(a) <u>*Target No</u>	(b) <u>Description</u>	(c) <u>Location</u>
1	CY1010	Bn Assy Area	882 245
2	CY1020	CP	905 335
3	CY1030	152-mm How Psn	928 297
4	CY0880(a)	130-mm Gun Psn	968 288
5	CY0890	122-mm How Btry	054 312
*	*	*	*
29	CY0990(b)	130-mm Gun Psn	034 308
30	CY1011	152-mm How Psn	046 313

* ADP requires 6 characters for target numbers.

Remarks:

(a) Attitude is 1,400 mils

(b) Attitude is 2,000 mils

(Classification)

(Classification)

Incl 1 (Tgt Acq) to App ____ (FA Spt Plan) to ANNEX ____
 (Fire Support) to OPORD ____.

References: Map Series JWT 128 MONROVIA, sheet 3 (DURIEN) edition 22-
 DMG 1:50,000

<u>Line No</u>	<u>(a)</u> <u>Unit</u>	<u>(b)</u> <u>Target No</u>	<u>(c)</u> <u>Rounds</u>	<u>(d)</u> <u>TOT</u>
1	A/1-13 FA (8 SP)	CZ1010 CZ1020 CZ1060	12 12 12	H-20 H-14 (a)
*	* * *	* *	*	* *
2	B/1-13 FA (8 SP)	CY1030 CY0880	24 12(b)	H-20 H-8
*	* * *	* *	*	* *
3	C/1-13 FA (8 SP)	CY0990 CY1010	24(c) 12	H-20 H-8
*	* * *	* *	*	* *

(For brevity only one battalion is shown, others are also scheduled)

Remarks:

(a) On-call

(b) 50% VT

(c) 50% WP

(Classification)

(Classification)

Incl 1 (Tgt Acq) to App ____ (FA Spt Plan) to ANNEX ____
 (Fire Support) to OPORD ____.

Reference: Map Series JWT 128 MONROVIA, sheet 3 (DURIEN) edition 22-
 DMG 1:50,000

<u>Line No</u>	(a) <u>Unit</u>	(b) <u>Target No</u>	(c) <u>Rounds</u>
Group C1Y			
1	A/1-13	CZ1010	24
2	B/1-13	CZ1060	12
3	A/1-70	CZ1040	12
Group C2Y			
4	A/1-13	CY0910	12
5	C/1-13	CY0920	24(a)
6	B/1-70	CY0930	12

Remarks:

(a) 50% VT

(Classification)

TAB E to Appendix I: Example-CAS Plan

Note. This example depicts a CAS plan, an independent document prepared in the FSE by the S3/G3 assistant responsible for air. The CAS plan provides the essential information required by CAS agencies to support a fire support plan presented in a force OPORD. The CAS plan is *not* part of the OPORD and is distributed through CAS channels. An information copy should be sent to the force FSCoord. The example depicted here has no relation to the OPORDs in tabs A and B.

(Classification)

Copy no 2 of 30 copies
53 Mech Div
Yanko (WLO70700), MONROVIA
101900 July
XA 222

Appendix ____ (CAS Plan) to Annex ____
(Fire Support) to OPORD ____.

Reference: Map Series JWT 133 MONROVIA, sheet 6 (LANCE) edition 68 DMG
1:50,000

Time Zone Used: ZULU

1. SITUATION

a. Enemy. Annex A (Intelligence) OPORD ____.

b. Friendly. Para 2 OPORD ____.

2. MISSION

Available CAS neutralize enemy reserves, FA and defensive positions;
provide aircraft on strip alert for on-call targets.

3. EXECUTION

a. Estimated 80 sorties available during period 120600-170300 Jul.

(Classification)

(Classification)

Priority to 1 Bde.

- b. On-call targets - see Inclosure 1 (Target List).
- c. 3 Corps FSCL is Hwy 27.
- 4. SERVICE SUPPORT (omitted)
- 5. COMMAND AND SIGNAL
 - a. Command.
 - (1) Tac FSE location: TBA.
 - (2) Main FSE: 070070.
 - (3) DASC collocated with corps TOC (955035).
 - (4) Preplanned requests for CAS to main FSE by 2400 daily.
 - b. Signal.
 - (1) Index 1-10, CEOI eff 060001 Jul.
 - (2) Airborne FAC available on request via appropriate TACP.

Acknowledge

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MG

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/s/Stinson
STINSON
G3

Annexes: Incl I On-Call Target List.

Distribution: Special

(Classification)

(Classification)

Incl 1 (ON-CALL TARGET LIST) TO Appendix ____ (CAS)
 Annex ____ (Fire Support) to OPORD ____.

References * * *

Line No	(a) Target No	(b) Description	(c) Location
1	CZ1010	Def Psn	9210 2810
2	CZ1020	Choke Point for Armor	9420 3010
3	CZ1030	Susp Bn Assy Area	9380 2940
* * *	* * *	* * *	* * *
10	CZ1100	Tk Co Assy Area	9080 3410

Remarks

- Sorties for on-call targets on strip alert.
- Request 4 arcft per msn; load 5.
- Neutralization is desired - all targets.

(Classification)



TAB F to Appendix I: Example-NGF Plan

Note. This example depicts an NGF plan, an independent document prepared in the FSE by the NGFO or NGLO. The NGF plan provides the essential information required by the ANGLICO and supporting ships to support a fire support plan presented in a force OPORD. The NGF plan is *not* part of the OPORD and is distributed through NGF channels. An information copy should be sent to the force FSCoord. The example depicted here has no relation to the OPORD's in tabs A and B.

(Classification)

Copy no 2 of 20 copies
53 Mech Div
Sampan (WLO20220) MONROVIA
121200 April
ZB 121

Appendix (NGF Plan) to Annex
(Fire Spt Plan) to OPORD .

Reference: Map Series JXT 111 MONROVIA, sheet 12 (KUAI) edition 70-DMG
1:50,000

Time Zone Used: ZULU

1. SITUATION

- a. Enemy Forces. Annex A (Intelligence) OPORD .
- b. Friendly Forces. Para 2, OPORD .

2. MISSION

NGF ships provide direct and general support fires in support of the division.

3. EXECUTION

- a. General. Request for NGF support through appropriate FSE or division main FSE.

(Classification)

(Classification)

b. Organization.

(1) General. TU 36.30 supports division during period 140500 - 151200 Apr.

(2) Allocations:

CA 75 (Hvy cruiser): GS 1 Bde.

CA 76 (Hvy cruiser): GS 2 Bde.

DD844 (Destroyer): DS TF 1-10 Mech.

DD845 (Destroyer): DS TF 1-12 Mech.

c. Miscellaneous.

(1) Target List - see Inclosure 1.

(2) Zones of fire and fire support stations - see Inclosure 2.

4. SERVICE SUPPORT (omitted)

5. COMMAND AND SIGNAL

a. Signal.

(1) Div CEOI Index 1-10.

(2) Signal for lifting fires - Div SOP.

(3) Annex G (C-E) to OPORD ____.

b. Command.

(1) Tac FSE location - to be announced.

(2) Main FSE - 020220.

Acknowledge

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MG

(Classification)

(Classification)

OFFICIAL:

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STINSON
G3

Inclosures: 1-Target List.
2-Zone of Fire Overlay.

Distribution: Special

(Classification)

(Classification)

Incl 1 (Tgt List) to Appendix ____ (NGF Spt Plan) to Annex ____
(Fire Spt Plan) to OPORD ____.

REFERENCES: * * *

Line No	(a) Target No	(b) Description	(c) Location
1	CZ1030(a)	Tank Assy Area	182940
2	CZ1070(a)	Supply Dump	201881
3	CZ1080(a)	Def Psn	281957
4	CY1090(b)	Bunkers	341021
5	CY1100(b)	Susp CP	300028

Remarks:

(a) Request 1 Bde maintain on-call.

(b) Request TF 1-12 Armor maintain on-call.

(Classification)

(Classification)

Incl 2 (Zone of Fire Overlay) to Appendix ____ (NBF Spt Plan) to
Annex ____ (Fire Spt Plan) to OPORD ____.

REFERENCES: * * *
(omitted)

(Classification)



TAB G to Appendix I: Example-Nuclear Support Plan to Division OPORD

Note. This example depicts a nuclear support plan to support a force OPORD. The format and content are the same for supporting an OPORD *with or without* a fire support annex. Therefore, this plan supports the OPORD in tab A which has no fire support annex or the OPORD in tab B which does have a fire support annex (tab C). Because nuclear planning progresses at a different rate, the nuclear support plan may be distributed at a time different from the OPORD it supports; and the distribution list for the nuclear support plan may be more limited than that of the OPORD.

(Classification)

Copy no 4 of 20 copies
52 Mech Div
Zebro (CX600065), MONROVIA
301345 August
AB 101

Appendix ____ (Nuclear Spt Plan) to ANNEX ____ (Fire Spt Plan)
To OPORD ____.

Reference: Map Series JWS MONROVIA, sheet 1 (LODE-VEIN) edition 69-DMG,
1:50,000

Time Zone Used: ZULU

1. SITUATION.

- a. Enemy Forces. Annex A (Intelligence), OPORD ____.
- b. Friendly Forces. Para 2, OPORD ____.
- c. Assumptions.
 - (1) Corps defenses have been severely tested.
 - (2) Corps has requested release of the nuclear package.

2. MISSION.

52 Mech Div provide nuclear fire support for the authorized corps package.

(Classification)

(Classification)

3. EXECUTION

a. Concept. Two division subpackages (A and B) are planned to support corps contingencies A and B.

b. Constraints.

(1) Preclude the following collateral damage with 99% assurance in population centers over (--) population.

(a) 5% incidence of injuries requiring hospitalization to personnel in the open.

(b) 5% incidence of moderate damage to single-story masonry buildings.

(2) Do not exceed negligible risk to unwarned exposed friendly troops.

c. Nuclear strike warnings-div SOP.

d. Nuclear aimpoints-see appendix 1 for subpackage A and appendix 2 for subpackage B.

4. SERVICE SUPPORT

a. General. Annex _____ (Service Support) OPORD _____.

b. Material/Services.

(1) PNL: as directed in OPORD _____.

(2) SASP locations: 101 (549 520); 102 (617 508).

5. COMMAND AND SIGNAL OPORD _____.

(Classification)

(Classification)

Acknowledge

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APPENDIXES: 1-Subpackage A.
2-Subpackages B.

Distribution: C

(Classification)

(Classification)

Incl 1 (Sub-package A) to App ____ (NUC Spt Plan) to Annex ____
 (Fire Spt Plan) to OPORD ____.

References: Map series JWS MONROVIA, sheet 1 (LODE-VEIN) edition 69-DMG,
 1:50,000

<u>MEANS</u>	<u>*YIELD</u>	<u>TARGET NO</u>	<u>DESCRIPTION</u>	<u>AIMPOINT</u>
155-mm How	0.1	CZ1000	Choke Pt	921 851
		CZ1010	Ave of Approach	258 841
		CZ1020	Ave of Approach	981 845
	*	*	*	*
	0.5	CZ1030	Reserve Area	914 928
		CZ1040	Reserve Area	968 938
8-in How	0.5	CZ1220	Choke Pt	917 901
		CZ1230	Bridge	998 916
	*	*	*	*
	5.0	CZ1420	Assy Area	921 880
Lance	10.0	CZ1430	Tank Assy Area	942 021
CAS	10.0	CZ1440	Tank Assy Area	921 098
	10.0	CZ1450	Supply Dump	041 097
ADM	0.5	CZ1460	Ave of Approach	950 871
		CZ1470	Key Terrain	985 874

* Hypothetical yields.

Timespan: (--)minutes.

Constraints: Para 3b of Nuclear Support Plan.

(Classification)

(Classification)

Incl 2 (Sub-package B) to App ____ (NUC Spt Plan) To Annex ____
 (Fire Spt Plan) To OPORD ____.

References: Map series JWS MONROVIA, sheet 1 (LODE-VEIN) edition 59-DMG,
 1:50,000

<u>MEANS</u>	<u>*YIELD</u>	<u>TARGET NO</u>	<u>DESCRIPTION</u>	<u>AIMPOINT</u>
155-mm How	0.1	CZ4010	Ave of Approach	961 021
	1	CZ4020	Ave of Approach	970 962
*	*	*	*	*
8-in How	0.5	CZ4190	Tank Elms	009 927
*	*	*	*	*
	2.0	CZ4420	Ave of Approach	984 971
	5.0	CZ4430	Assy Area	975 075
Lance	5.0	CZ4440	Regt CP	038 021
	10.0	CZ4450	Assy Area	008 078
CAS	10.0	CZ4460	Supply Dump	065 091
ADM	0.5	CZ4470	Ave of Approach	062 918
	1.0	CZ4480	Key Terrain	042 925
		CZ4490	Key Terrain	025 918
	2.0	CZ450	Ave of Approach	020 938

* Hypothetical yields.

Timespan: (--) minutes.

Constraints: Para 3b of Nuclear Support Plan.

(Classification)



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TAB H to Appendix I: Example-Chemical Support Plan to Division OPORD

Note. This example depicts a chemical support plan to support a force OPORD. The format and content are the same for supporting an OPORD *with or without* a fire support annex. Therefore, this sample plan supports the OPORD in tab A which has no fire support annex or the OPORD in tab B which does have a fire support annex (tab C). The chemical support plan may be issued at a different time than the OPORD and may have a more limited distribution than the OPORD.

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Zebro (CX600065), MONROVIA
301345 August
AB 101

Appendix _____ (Chemical Spt Plan) To Annex _____.
(Fire Spt Plan) To OPORD _____.

Reference: Map Series JWS MONROVIA, sheet 1 (LODE-VEIN) edition 69-DMG,
1:50,000

Time Zone Used: ZULU

1. SITUATION

- a. Enemy Forces. Annex A (Intelligence), OPORD _____.
- b. Friendly Forces. Para 2, OPORD _____.
- c. Assumption. The employment of chemical munitions has been authorized by corps.

3. MISSION

FA and CAS provide chemical fires in support of division operations.

(Classification)

(Classification)

3. EXECUTION

a. Concept. On-call chemicals (GB and VX munitions) are planned for delivery by FA and CAS means.

b. Targets. See chemical target list (Incl 1).

c. Coordinating Instructions. Predicted weather for period 31 Aug-5 Sep: windspeed/direction-5 MPH/SW; average temperature-70.

Conditions favor our use of chemicals.

4. SERVICE SUPPORT

a. General. Annex _____ (Service Support) OPORD ____.

b. Material/Services.

(1) PCL: as directed in OPORD ____.

(2) SASP location: 101 (549 520); 102 (617 508).

5. COMMAND AND SIGNAL OPORD ____.

Acknowledge

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G3

Incl 1: Chemical Target List.

Distribution: C

(Classification)

(Classification)

Incl 1 (Chemical Target List) to Appendix ____ (Chemical Support Plan) to Annex ____ (Fire Spt Plan) To OPORD ____.

References: Map series JWS MONROVIA, sheet 1 (LODE-VEIN) edition 69-DMG 1-50,000

<u>LINE NO</u>	(a) <u>TARGET NO</u>	(b) <u>DESCRIPTION</u>	(c) <u>LOCATION</u>
1	CY2090(b)	Inf Assy Area	875 005
2	CY2100(b)	Def Psn	694 106
3	CY2110(a)	Def Psn	891 131
*	*	*	*
8	CZ2010(b)	Regt CP	058 981

Remarks:

(a) CAS attack means.

(b) FA attack means.

(Classification)



Appendix J

Fire Support For Special Operations

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Appendix J

Fire Support for Special Operations

WHY

- Special considerations apply to the integration of fire support and maneuver into the battle plan both in special environments and in operations requiring special training, equipment, or techniques.

WHAT

- This appendix tells you:
 - what special fire support considerations are applicable in:
 - built-up areas,
 - mountains,
 - jungles,
 - deserts, and
 - northern regions;
 - what special fire support considerations are applicable in:
 - air assault operations,
 - airborne operations,
 - river crossings,
 - counterguerilla operations, and
 - amphibious operations.

Section I. FIRE SUPPORT OF MILITARY OPERATIONS IN SPECIAL ENVIRONMENTS

J-1. Military Operations on Urbanized Terrain (MOUT)

a. The massive growth in urban areas and manmade changes in the landscape will significantly affect the conduct of future battles—especially in Western Europe. Avoidance of these areas is no longer possible. The defender has the advantage in the use of urban areas. He has superior protection as well as concealment and covered routes of movement. The attacker can isolate and bypass *some* urban areas but will be required to attack others. He is faced with fighting into a well-defended position. Both attacking and defending forces will take advantage of cover and concealment offered by urban areas but will be hampered by reduced visibility. Commanders at all levels must consider the advantages and disadvantages of using an urban area within the overall concept of their particular operation. The decision to attack or defend an urban area may have political as well as operations impact. MOUT may involve both armored/mechanized and light infantry forces. For further details on how maneuver units fight in urban areas, see Draft FM 90-10, *Military Operations on Urbanized Terrain (MOUT)*.

b. Categories of Urban Areas.

Urban areas can be roughly divided into four categories, each presenting different problems and opportunities to tactical commanders:

- small villages (population 1,000 or less),
- strip areas, generally interconnecting areas between villages and towns along major roads and valleys,
- towns and small cities (population up to 100,000 and not part of a major urban complex, and

□ large cities with associated urban sprawl (population up to millions covering 100 or more square miles).

Small villages and strip areas will be encountered most commonly by maneuver companies and battalions. Towns and small cities will impact on the operations of brigades and divisions. Large cities and major urban complexes will affect operations at division or corps level.

c. Fire support Considerations

(1) *Offensive Operations*

(a) The tactical advantages and disadvantages of firing an extensive FA or tactical air preparation must be weighed carefully. Preparations have a devastating physical and psychological effect on the defender; however, increased rubble hampers offensive operations. The destruction of key installations should be considered in light of their usefulness to the force. The political impact must also be considered.

(b) A heavy concentration of indirect fire should accompany penetration unless the enemy withdraws. In the attack of a defended town or small city indirect fires are planned to block reinforcement. Harassing and interdiction fires will help prevent enemy movement in the streets, rooftop observation, and use of withdrawal routes.

(c) Smoke should be employed to the maximum extent to cover the approach of the attacking force and to obscure the vision of enemy direct fire gunners.

(2) *Defensive Operations*. Initially, FA should be located in position areas on the outskirts of a built-up area facing the enemy's approach. From these locations batteries can engage the enemy at maximum range to disrupt and slow his advance. CAS should be targeted against advancing enemy elements beyond FA range. At the appropriate time the FA must displace along preselected routes to positions behind the built-up area.

(3) *Munitions Effects*. The effects of ICM and high explosive (HE) with variable time (VT) fuzes are severely reduced by

structures, although these munitions are effective against personnel on rooftops. High angle fire with delay fuzing is required to penetrate buildings. Illumination and incendiary munitions are especially effective. Chemical munitions are valuable in forcing the enemy out into open spaces. Smoke is used to screen movements and obscure enemy observation. Ammunition expenditures will be heavy, especially if preparatory fires are used to a great degree.

(4) *Observation*. Ground observation will be limited. Observers on the ground should be assisted by air observers or air cavalry units. Observation posts can be established in high structures although survivability conditions may preclude the occupation of rooftops.

(5) *Target Acquisition Devices*. Effectiveness of these devices is somewhat degraded.

(a) Hot spots picked up by infrared sensors will be numerous and difficult to interpret.

(b) Side-looking airborne radar (SLAR) effectiveness will be reduced by the masking effect of buildings.

(c) Overhead aircraft reconnaissance will be vulnerable to enemy air defenses.

(d) Ground radar and sensors will be impaired by structures, but can be used to monitor routes into cities and activity along streets, alleys, or other open areas within cities.

(6) *Field Artillery and Mortars*. FA and mortars are principal fire support means of forces operating within built-up areas.

(a) High angle fire with delay fuzing is used to penetrate buildings.

(b) Off-route FA (and helicopter) delivered FASCAM can be used to block enemy movement routes and assist in flank security.

(c) Field artillery supports maneuver elements in built-up areas through the normal assignment of tactical missions. Self-propelled FA sections may be attached at maneuver company level for employment in

the direct fire role; however, too much of this decreases the FA's ability to mass fires.

(d) Combat engineer vehicles (CEV) with their dozer blades and 165-mm breaching cannons can also be effectively used to overcome or suppress strongpoints.

(e) Because friendly troops habitually operate very close to the enemy, positioning of firing units is important. If possible, indirect fire weapons should be located to the left or right of (rather than directly behind) maneuver elements to reduce the danger of short rounds.

(f) *Close Air Support.* CAS can provide the ground commander with selective and discriminating fire support. In addition to general purpose bombs, cluster bomb units, rockets, cannons, laser guided bombs, and electro-optically guided missiles are particularly suited for engaging hard targets. If possible an airborne forward air controller (FAC) should control strike aircraft from his better vantage point; however, ground FAC's or fire support team (FIST) personnel trained to control close air support (CAS) in emergencies can assume the task.

(g) *Communications.* Radio traffic will be degraded by buildings so wire, messengers, and radio relays must be used. Wire should be routed through buildings and sewers for protection.

J-2. Mountain Operations

a. Characteristics of Mountain Operations

Limited routes of communication, highly changeable weather, and degraded radio communications are commonplace. Because of rugged terrain, mobility in mountain combat is provided primarily by the helicopter, thus airmobile infantry will play a dominant role. The configuration of the terrain induces isolated conflicts that are difficult for higher commanders to control, so small unit commanders must expect to

operate independently or semi-independently. The advantages in mountain combat overwhelmingly favor the defender. The focal points in mountain combat are the heights; the essence of mountain warfare is to attempt always to *fight down from the top*. Training and physical conditioning will be important factors in insuring success. A detailed discussion of how maneuver units fight in the mountains is found in FM 90-6, *Mountain Operations*.

b. Fire Support Considerations

(1) *Munitions Effects.* Mountains offer considerable natural cover that degrades the effects of all types of fire. Greater quantities of ammunition may be required to accomplish a given task. Wind currents, eddies, and turbulence make it extremely difficult to establish and maintain effective smoke screens.

(2) *Observation.* The effectiveness of long range artillery and naval gunfire can be increased due to elevation and good observation afforded by mountain terrain. Laser rangefinders and night observation devices are especially useful. In heavily wooded areas, observers should be prepared to climb trees to gain observation. Restrictions to view caused by terrain masking and clouds can often be overcome by employing air observers in conjunction with ground observers.

(3) *Targets.* Suppression of enemy air defense (SEAD) takes on added importance in the mountains because of dependence on all types of aircraft. Enemy machineguns and automatic small arms weapons emplaced on the heights pose a threat to helicopter movement and must be suppressed. Narrow defiles that can be used as routes of supply, advance, or withdrawal are often profitable targets. Rock and snow masses above enemy positions can often be converted into highly destructive rockslides and avalanches. Likely enemy indirect fire weapons positions should be plotted as targets.

(4) *Target Acquisition Devices.* Surveil-

lance and moving target radar and sound/flash ranging equipment are less effective in mountain areas. Additional ground surveillance and moving target radar and unattended ground sensor teams may be required. Proper positioning of countermortar and counterbattery radar is important; these radars will be more effective since hostile fire will be predominantly high angle. More extensive use of shell reports should be emphasized.

(5) *Field Artillery and Mortars*. All types of field artillery and mortars can be used. Mortars and light or medium FA may be airlifted into position although bad weather and reduced lift capability in high altitudes often restrict movement by air. Self-propelled FA is generally restricted to roads. Widely dispersed units or compartmentalization of terrain may necessitate decentralized operations. FA units may be attached to maneuver elements and have to operate independently for short periods. Ammunition resupply is difficult, making selection of targets and allocation of ammunition critical. Special care must be taken not to waste ammunition on unprofitable targets. Effectiveness considerations peculiar to the mountains are as follows:

(a) The steepness of slopes will greatly increase the importance of high angle fire from FA and mortars.

(b) Hard, rocky ground will greatly enhance the lethality of HE projectiles.

(c) Shell ICM and shell HE/fuze quick are ineffective in deep snow. Airbursts will give better results.

(d) Unobserved fires are less reliable because weather conditions change rapidly and altitudes vary greatly.

(6) *Close Air Support*. CAS will often be required to bring adequate heavy firepower to bear. While steep slopes sometimes restrict the direction from which airstrikes can be emplaced, massive bombings with typical combat loads ranging from 3-7 tons and delayed fuzing can cause massive slides onto

the enemy positions. For targets situated in caves, precision guided weapons can effectively destroy or seal off enemy potential.

(7) *Communications*. Principal communications means are radio and wire. Radio relays may be required when radios do not have line-of-sight. Wire-laying efforts may be frustrated by terrain and distance. Cross-country wire can be laid by aircraft, but specifically trained and equipped helicopter crews are required. Survivability considerations may dictate that antennas be located on sides rather than tops of hills.

J-3. Jungle Operations

a. Characteristics of Jungle Operations

In the jungle the factors of climate and vegetation combine to restrict movement, observation, fields of fire, communication, and target acquisition. However, these factors favor military operations by providing excellent cover and concealment. Jungle battles are normally very decentralized. They are most often fought at platoon and company level. The ambush is frequently employed and highly effective. Patrols, raids, static defenses, and attacks on enemy forces, their bases, or their supplies are all commonplace. Airmobile infantry, field artillery, and light armored forces are valuable assets in jungle warfare. High mobility is achieved most effectively by air movement. Close air support is essential. The shifting of fire support assets is a major way in which commanders concentrate combat power in jungle operations. A common technique is to employ infantry to find the enemy, pin him down, and cut off his escape. Field artillery, mortars, and air firepower are then concentrated on the enemy to destroy him. A detailed discussion of how maneuver units fight in the jungle is found in FM 90-5, *Jungle Operations*.

b. Fire Support Considerations

(1) *Munitions Effects*. Heavy vegetation

degrades the effects of all types of munitions.

(2) *Observation.* Ground observation is often severely limited, and aerial observation is far more productive. Limited visibility makes it difficult for observers to locate themselves. Air and ground observers may collaborate on the adjustment of fires. Positions for target acquisition equipment are usually limited.

(3) *Targets.* Jungle battles are usually characterized by extremely limited visibility and close combat. The preponderance of fire support is employed very close to friendly units, and must be closely coordinated. Adjustment is often conducted using creeping techniques and sometimes by sound. Since jungle cover affords concealment from ground and air observation, the value of smoke screening is extremely limited.

(4) *Field Artillery and Mortars.* Since mobility is difficult, fire support may be restricted by the inability to quickly move mortars or artillery so that maneuver units are within effective range. Advance planning is necessary to avoid such difficulties as nonavailability of air movement assets or scarcity of suitable firing positions. Other considerations peculiar to the jungle include the following:

(a) High angle fire is often necessary to clear position area masks.

(b) Thick canopy makes VT fuzes ineffective. Fuze delay is required to penetrate to the ground.

(c) Lack of adequate survey will degrade the accuracy of unobserved fires.

(5) *Close Air Support.* CAS is extremely effective in bringing heavy fires to bear. Airborne FAC's are extremely helpful in locating both targets and friendly units, as well as controlling airstrikes. When observation is impaired, heavy bombs (2,000-3,000 pounds) can clear the jungle canopy. Many cluster munitions are designed for penetration of jungle canopy before detonation and to cover relatively large areas.

(6) *Communications.* Radio relays and elevated antennas are often required to overcome line of sight restrictions. Cross-country wire can be laid by aircraft, but specially trained and equipped helicopter crews are required.

J-4. Desert Operations

a. Characteristics of Desert Operations

The desert can have a weakening effect on both men and machines. Environmental extremes include temperatures ranging from 30° to 130° Fahrenheit, glaring sunlight, sudden violent sandstorms or duststorms, and rains that bring mud but little relief from water shortages. The openness of most desert regions favors a fluid type of warfare in which armored, mechanized, and airmobile forces are predominant. Airpower is crucial to winning the land battle to an even greater degree than in other environments. Security takes on added importance and active deception techniques (e.g., feints, ruses, and decoy equipment) are indispensable for successful concentration of forces on the desert battlefield. Desert battles tend to be more centralized with brigade and battalion commanders often personally coordinating the interactions of tanks, mechanized infantry, and field artillery. Engagements are often fought at long ranges, thus placing a premium on accurate gunnery at long ranges. Inability to see prominent terrain features and lack of survey control severely increase land navigation problems for both maneuver and fire support elements. A detailed discussion of how maneuver units fight in the desert is found in FM 90-3, *Desert Operations*.

b. Fire Support Considerations

(1) *Munitions Effects.* Because of extreme temperature conditions it is often difficult to make profitable use of smoke. The most favorable conditions exist on clear moonlit nights.

(2) *Observation.* Ground observation will be hampered by heat waves and

duststorms. Air OP's are often more productive than ground OP's. Map spotting of targets will be difficult.

(3) *Targets.* Enemy antitank guided missiles (ATGM) and air defense weapons are principal targets for suppression by indirect fires. Large quantities of smoke and suppressive fires are required for units crossing open areas during daylight. Target acquisition devices experience less obscuration, and their effectiveness is enhanced.

(4) *Field Artillery and Mortars.* The lack of survey control will severely degrade the accuracy of unobserved fires. Accuracy may also be degraded by rapidly changing morning and evening weather conditions. Since facilities are widely dispersed, FA units may be attached to maneuver elements for short periods. Traffic along lines of communication is particularly vulnerable to air attack making resupply of fire support elements difficult. FA and mortar support may be interrupted if these elements receive counterbattery fire. Batteries will often move into position, fire, and rapidly displace to another position. A battery may displace several times a day.

(5) *Close Air Support.* CAS may be hampered by the lack of covered approaches, but increased visibility permits engagement from standoff ranges. A high priority is placed on command and control because of widely dispersed friendly and enemy formations. Ground movement is readily apparent but panels or other visual or electronic identification may be required so that pilots can differentiate between enemy and friendly units. Planning for air support must be as detailed as time permits to determine mission and armament requirements, time over target, and method of control.

(6) *Naval Gunfire.* When ground forces are supported by naval gunfire or Navy or Marine aircraft, elements of the attached air and naval gunfire liaison company (ANGLICO) may require some additional

vehicles in desert regions.

(7) *Communications.* Security considerations will dictate that radio listening silence and use of wire communications be more frequent.

J-5. Northern Operations

a. Characteristics of Northern Operations

Seasonal effects in northern regions differ among winter, summer, and the transition periods (spring breakup and fall freezeup). Summer has long periods of daylight; winter has long nights, deep snow, and extreme cold. Spring thaws turn low-lying areas into a morass of mud. Certain weather phenomena are peculiar to northern regions. Whiteouts and greyouts cause a loss of depth perception that increases the hazards of flying, driving, or skiing. Ice fog can form over bodies of troops disclosing their location. In extreme cold, metal becomes brittle and increased parts breakage occurs in all types of weapons. Experience has shown that up to five times the normal time is required to perform even simple tasks. There is no clear advantage to the use of either heavy or light forces for northern operations. Light infantry can attain excellent ground mobility using skis or snowshoes during winter but are severely restricted during summer and transition periods. Mechanized and armored forces are excellent in summer and winter but restricted in transition periods. Light infantry is ideal for airmobile operations year round. Army aviation assets for both airmobile operations and resupply are essential. Tracked vehicles provide good mobility except during transition periods; wheeled vehicles and trailers are not generally suitable. A detailed discussion of how maneuver units fight in the north is found in FM 90-11, *Northern Operations*.

b. Fire Support Considerations

(1) *Munitions Effects.* Deep snow and mud degrade munitions effects. More firepower may be required to achieve desired

results. On clear days, inversion conditions usually exist over snowy surfaces causing smoke to remain near the surface. Smoke lasts longer and travels farther.

(2) *Observation.* The northern environment limits observation.

(a) Daylight is of short duration in winter.

(b) Snow reduces depth perception, obscures terrain features, and causes snow blindness.

(c) Flat, snow-covered terrain features make map spotting of targets difficult.

(d) Radar and other electronic acquisition means are sensitive to low temperatures.

(3) *Targets.* Suppression of enemy air defense positions is a principal fire support activity. Fires can be used to create snowslides (avalanches) as a fringe benefit.

(4) *Field Artillery and Mortars.* Responsiveness and rates of fire may be degraded by heavily clothed personnel, cold weapons, and fogged lenses on fire control equipment. Excessive snow or thawing conditions may hamper the ability of firing units to move. Inaccuracies due to extreme weather conditions are of greater than normal magnitude. Inadequate or nonexistent survey will severely degrade the accuracy of unobserved fires. Resupply of ammunition is often difficult. The effects of certain munitions are degraded:

(a) Shell ICM and shell HE/fuze quick are ineffective in deep snow and mud. Airbursts will give better results.

(b) Snow usually smothers smoke canisters. White phosphorus produces desired smoke but particles buried in snow may be hazardous for long periods.

(5) *Close Air Support.* Because environmental conditions hamper the activities of FA and mortar firing units, CAS plays a large role in northern fire support. Ordnance that minimizes the degrading effect of snow and mud are available in the Air Force inventory. Unless weather becomes a critical factor, the rapid, unhampered

mobility of aircraft is a distinct advantage.

(6) *Communications.* Radio communication is rapid and continuous; however, both dry and wet cell battery life decreases with lower temperatures.

Section II. FIRE SUPPORT FOR OTHER OPERATIONS

J-6. Air Assault Operations

a. Characteristics of Air Assault Operations

While the percentage of armored or mechanized forces has risen in the US Army, the most dramatic advance has been adoption of the "airmobile" concept. The US Army is the foremost exponent of airmobility. By increasing the mobility of infantry and FA and employing attack helicopter and air cavalry, the commander can significantly extend his area of influence. Air assault forces are particularly useful when speed is essential, distances are great, and terrain is restrictive. Air assault forces can be employed in the offense, defense, or retrograde to:

- ☐ seize distant airfields, airheads, bridges, or high speed approaches;
- ☐ conduct penetrations or raids;
- ☐ conduct covering force operations;
- ☐ conduct wide-area surveillance or denial operations;
- ☐ assault or defend in towns, forests, and mountains;
- ☐ reinforce threatened sectors;
- ☐ conduct feints and diversions;
- ☐ serve as a highly mobile reserve; and
- ☐ exploit the effects of nuclear weapons or conventional airstrikes.

Normally a brigade task force is the major maneuver element in an air assault operation. Fire support normally includes organic mortars, one FA battalion in support of a maneuver brigade, and available CAS and naval gunfire. Air assault forces have some limitations that include:

- vulnerability during takeoff, landing, and assembly;
- vulnerability to enemy armor;
- vulnerability to enemy aircraft and air defense weapons;
- sensitivity to weather conditions although surprise is enhanced during periods of limited visibility; and
- limitations on the amount of heavy equipment that can be moved.

(1) *Planning Air Assault Operations.* Planning for air assault operations follows an inverse planning sequence. This sequence includes five steps:

(a) *The Ground Tactical Plan.* This plan describes how maneuver elements will close with and destroy the enemy and includes plans for seizure of key objectives, plans for defense, plans for linkup or withdrawal, and plans for subsequent operations and displacements.

(b) *The Landing Plan.* This plan is based on the ground tactical plan and as a minimum includes the sequence, time, and place of arrival of troops, equipment, and supplies in the objective area.

(c) *The Air Movement Plan.* This plan is prepared by the ground unit commander and is based on the ground tactical plan and the landing plan. It includes a flight route diagram and an air movement table.

(d) *The Loading Plan.* This plan is based on the air movement plan. Tactical integrity is maintained and key personnel are distributed throughout the aircraft loads. The ground commander designates the sequence for movement of personnel, supplies, and equipment.

(e) *The Staging Plan.* This plan provides for the integration of the ground force and aviation units into a tactical airmobile force in the pickup zone. Control of movements into the staging area is essential in order to prevent congestion and confusion.

(2) *Reference.* More detailed information on air assault operations can be found in FM 90-4.

b. Fire Support Considerations

(1) *Communications.* In air assault operations the primary means of tactical communications is radio. Wire is usually restricted to internal communications within a landing zone or base of operations. Reliable communications are *essential* to the precise timing and execution of air assault operations.

(2) *Intelligence and Target Acquisition.* While air assault units are preparing for an assault, higher headquarters provide early intelligence information. This may come from a variety of sources including agents, tactical air reconnaissance, or aerial photographs. It is important to get as much information as possible about opposing forces and terrain in the objective area.

(3) *Fire Support Planning.*

(a) When prearranged plans or fragmentary orders are used in lieu of operation orders and fire support annexes, appropriate paragraphs should be devoted to fire support.

(b) Because of the reduced amount of FA organic to air assault units, CAS, naval gunfire, or additional FA may be required to insure full coverage.

(c) If landing zones and operational areas are beyond the range of indirect fire weapons behind friendly lines, airmobile FA may be used to support maneuver forces. Until the artillery is positioned, other means of fire support will be required to support maneuver elements. Mortars that move with the assault force assume increased importance because they are usually the first organic indirect fire support means available to the commander.

(d) Fire planning for a specific air assault operation is initiated upon receipt of the mission. Maneuver planning follows an inverse planning sequence. Concurrently with the development of the plan of maneuver, supporting fires are planned and programed so that fire support is provided throughout the operation.

1. Offensive and defensive fires are planned to support the force as it maneuvers

to accomplish its assigned mission in accordance with the ground tactical plan.

2. The air assault force is most vulnerable during landing and assembly. Preparatory fires planned to support the landing may be scheduled and/or on call. These fires must be planned and timed in such a manner that continuous coverage of the landing zone and its approaches is provided throughout the assault. Split-second timing is essential as fires are lifted and/or shifted in order to provide required coverage yet permit safe passage of the friendly air assault force.

3. Air defense suppressive fires are planned against known or suspect targets along the flight route in support of the air movement and staging plans. These fires are especially critical when aircraft are fully loaded and not able to fly close to the ground well.

4. Defensive fires may be required around pickup zones to support the loading plans. If required, these fires are critical and require coordinated planning because the friendly force is systematically reduced with the departure of each flight. High-angle fire on enemy positions may be necessary to allow armed aircraft to conduct their mission while flying under FA fires.

(e) Fires to support an assault may be planned, in many instances, on the basis of suspect target locations rather than known target locations. All intelligence-gathering agencies should be exploited in order to acquire the best target information possible. A target can be personnel, materiel, or a piece of terrain that warrants engagement by fire. Target analysis should be conducted to determine the importance of targets and the capabilities of available weapons to attack the targets. The importance of a target is determined by the threat or potential threat the target presents to the accomplishment of the mission.

(f) Because of the decentralized nature of air assault operations, greater emphasis is placed on small units. Upon receipt of the

mission, FIST personnel at company level plan fires and forward target lists to the battalion fire support officer. Coordination at company level is of prime importance in air assault operations.

(4) *Fire Support Coordination.*

(a) In air assault operations it is important to plan and coordinate thoroughly on the ground so that execution in the air is achieved with the split-second timing so vital to a successful operation.

(b) Fire support section personnel responsibilities must be clearly delineated when maneuver units use both a ground command post and an aerial command post because each fire support means may have separate request/communications channels.

(c) Coordinating measures discussed in chapter 3 and appendix H are applicable to air assault operations as well as conventional operations. Airspace restrictions, such as airspace coordination areas, flight corridors, and altitude restrictions, will be kept to a minimum and imposed only when necessary. Such restrictions will be evaluated on a case-by-case basis and normally require approval of the airspace control authority. The coordination of information pertaining to indirect fire activity at the lowest level having the capability to resolve the conflict should be accomplished to reduce potential conflict between indirect fires and tactical aircraft. The maneuver unit commander is responsible for detailed employment, control, or coordination of airspace use by forces directly supporting his operations. Boundaries and airspace coordination areas (ACA) may be used in air assault operations when normal coordinating procedures are not considered adequate. Aviation control measures, such as flight routes, flight corridors, and orbit points, may be used by the fire support coordination facilities as additional means of coordinating fires.

1. The use of flight routes and flight corridors is coordinated by the flight operations center of the Army aviation element with the supported force to permit the

planning of fires and to protect the movement of aircraft. This coordination normally takes place at the brigade FSE and is accomplished by the aviation liaison officer to the supported force. All fires within the corridor are coordinated or restricted. Restrictive

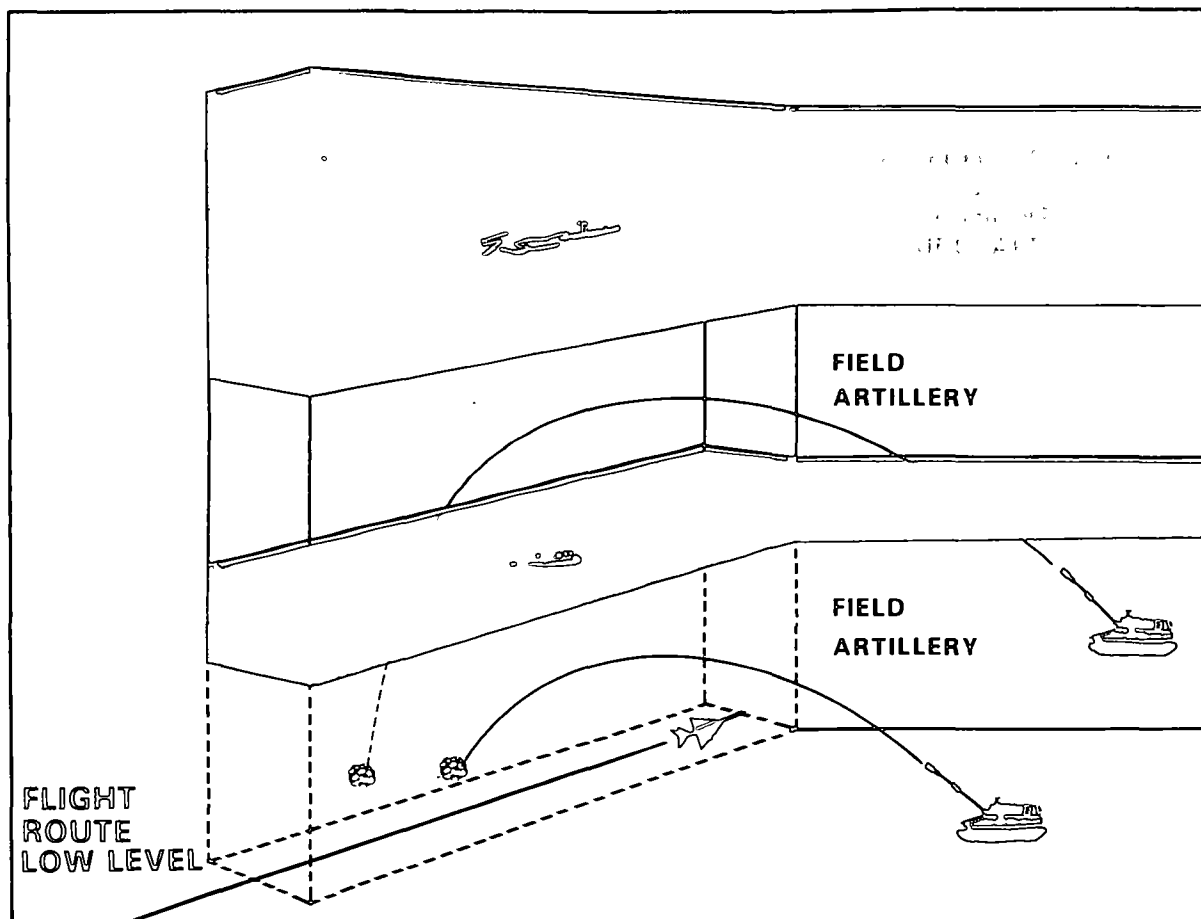


Figure J-1. Flight route and flight corridor.

measures, such as trajectory limitations (fig J-1), may be used to provide safety for the force as it heads toward the objective area. Established altitude for aircraft and field artillery use must be coordinated between commanders of supporting air and FA.

2. The simultaneous engagement of targets by more than one fire support means is desirable in an air assault operation because of the smaller amount of ground-based field artillery normally available. An ACA may be used as a control measure to permit the desired simultaneous engagement of targets by tactical air and FA (or naval gunfire) and to provide a safe passage for friendly aircraft. The ACA (fig J-2) is

designed to create a box in the sky through which aircraft may move to support the operation by fire. Close air support aircraft then may operate with relative safety through this box. Properly coordinated and planned, ACA's allow for the simultaneous engagement of targets by more than one fire support means, as well as safe passage for troop movement.

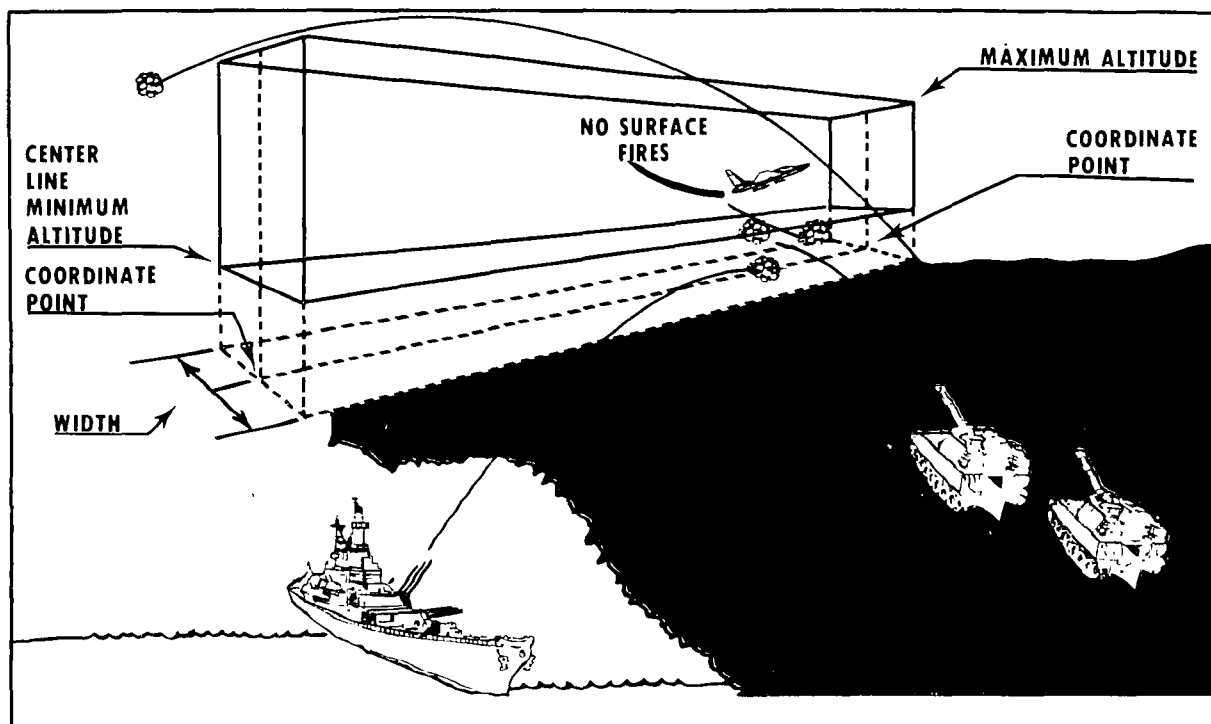


Figure J-2. Airspace coordination area.

(5) *Landing Zone Preparation.*

(a) When preparatory fires are deemed necessary to support an air assault, the fires are planned and coordinated as outlined in (3) and (4) above. The battalion FSO operating in the maneuver element's aerial command post over the battle area normally is in the best position to coordinate the delivery of

fires and insure that the air assault task force reaches a softened landing zone. The FSO must have good communications with, and positive control over, the fire support facilities.

(b) The direct support FA battalion may not be able to mass its fires for the preparation in an air assault operation

because of the need for area coverage and because of the extended range over which the brigade may be operating. Therefore, greater reliance must be placed on timely and accurate fire support from a variety of fire support means. The specific techniques used to prepare the landing zone vary according to the mission, the enemy, the terrain, and the troops available. However, since the air assault force is most vulnerable during landing and assembly, every effort must be made to destroy the enemy and his fixed defenses in order to preclude or minimize the threat of a counterattack against the assaulting force. Emphasis is placed on shifting and/or lifting fires. Close control and timing is required for lifting fires. If fires are lifted too early before the assault, the enemy may have time to recover from the effects of the preparation and counter the assault landing.

(c) If aircraft control points along the flight route are to be used as a timing reference for sequencing the fire support means, an arrival time, based on H-hour and furnished by the aviation liaison officer, is assigned to each checkpoint. The FSO insures that the aviation element, including escort gunships, and other fire support agencies have the frequency of his fire direction net. The flight leader normally informs the aerial command post when the flight reaches each checkpoint. The FSO must be informed of the progress of the lift flight so that he can properly control and coordinate the delivery of preparatory fires on the landing zone. An example of the sequence of events for preparation of the landing zone is shown in 1 through 4 below.

1. The flight leader reports that the lift helicopter flight has reached the initial point. Field artillery, at the command of the FSO, marks the landing zone for the tactical airstrike (fig J-3). The forward air controller (FAC), monitoring the fire direction net, confirms the target location and obtains clearance to begin the strike. Any subsequent corrections are relayed through the FAC.

TO INSURE THAT THE PREPARATION OF THE LANDING ZONE IS ADEQUATE, TIMELY, AND LIFTED/SHIFTED AT THE PROPER TIME, THE FSO MUST ESTABLISH:

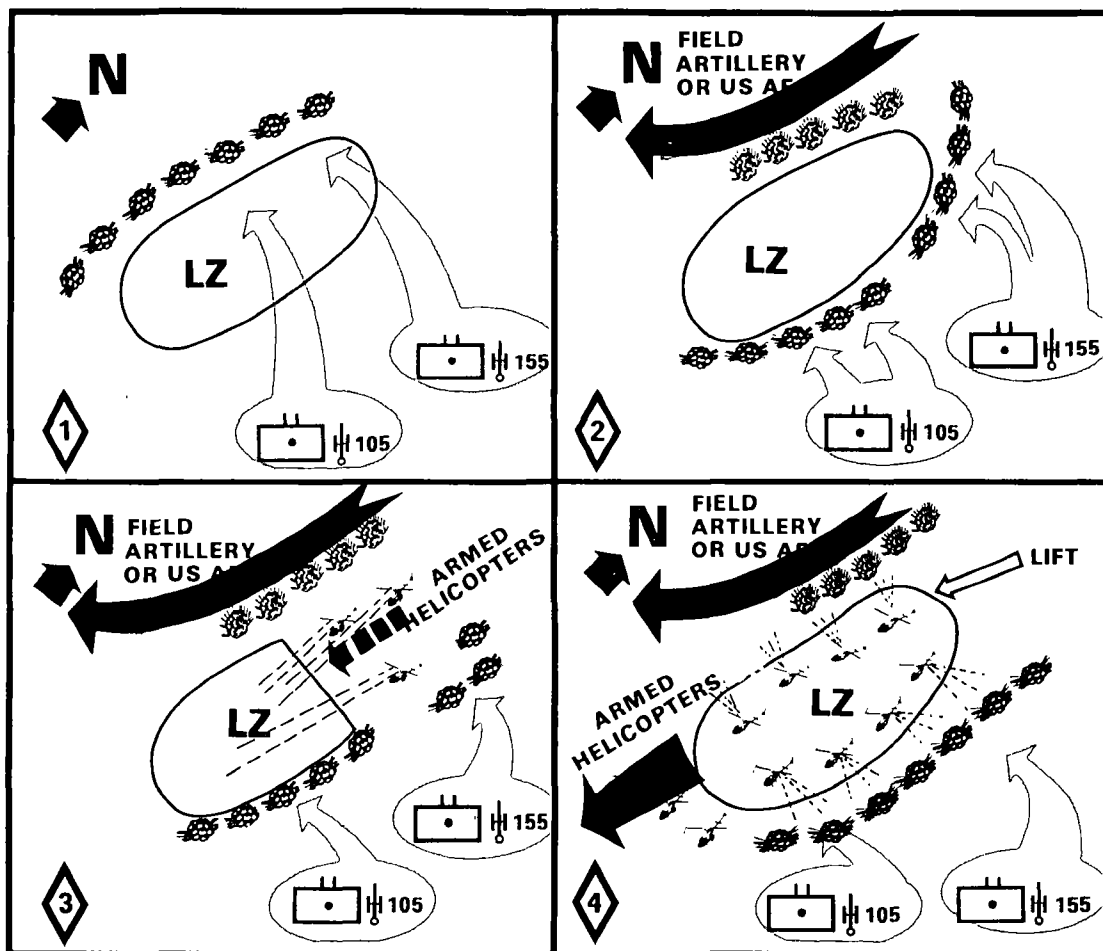
- RELIABLE COMMUNICATIONS,
- POSITIVE CONTROL OVER FIRE SUPPORT FACILITIES, AND
- DETAILED COORDINATION WITH THE AVIATION ELEMENT OF THE AIR ASSAULT TASK FORCE.

2. When naval gunfire is available to the airmobile force, it can be controlled and adjusted by the FSO in much the same manner as FA fire.

3. Escort gunships provide security to the lift helicopters during the loading, movement, and landing phases. They are employed when neutralization fires are required or when a combination of air and ground protection is essential to the air assault operation. When allocated as a fire support means, gunships may be used to fire preparatory fires on the landing zone. At a prearranged time, the aerial weapons flight

leader checks into the fire direction net and reports when he is ready to fire.

4. The lift helicopter flight leader reports his arrival at the release point, and the FSO causes the strike and surface-to-surface fires to be shifted at a safe distance from the landing zone. The FSO clears the aerial weapons gunships, which precede the lift helicopters, to deliver their fires on the landing zone. Once the aerial weapons ships have delivered their fires, they proceed to a predesignated orbit point to await on-call fires or to rejoin the lift helicopters as they depart the landing zone.



Notes:

- 1 Field Artillery marking rounds on far side of LZ.
- 2 Field artillery and tactical air preparation at the same time.
- 3 Blocking fires—tactical air, artillery, and gunships
- 4 Suppressive fires by lift ship.

Figure J-3. Landing zone preparation.

(d) The keyword in controlling a landing zone preparation for an air assault operation is flexibility. Because of the great number of aircraft involved, a rigid time frame cannot always be followed. The FSO must be flexible enough to alter the schedule of fires while en route to the objective area. For example, if the flight leader reports his arrival at a checkpoint at a time other than the scheduled time, the FSO can compensate for this difference by altering the schedule of FA fires.

(e) *The FSO is responsible for coordinating all fires against ground targets within the zone of the maneuver commander. He must know the locations of friendly elements at all times. Before an operation, the FSO briefs the FIST chief(s) regarding the fire support available and the scheme of maneuver. The FIST chief must be familiar with the details of the operation so that he can coordinate fire support in the FSO's absence.*

J-7. Airborne Operations

a. Characteristics of Airborne Operations

Although air assault forces have significantly enhanced the mobility of the Army, airborne units still constitute a rapid, deployable contingency force that can be deployed anywhere in the world on extremely short notice. Strategic surprise can be achieved by rapid shift of airborne forces over great distances. Tactical surprise is achieved by the sudden, unexpected mass delivery of forces into an objective area. Airborne forces can be employed as a combat force or used to provide a show of force in furthering national interests. Airborne forces are particularly well suited for:

- execution of envelopments or turning movements,
- attacks to exploit fires on distant objectives,
- seizure of critical terrain or facilities,
- mobile reserves,
- raids, and
- diversions.

Airborne operations are normally conducted at division level. Fire support usually includes organic mortars and 105-mm FA, CAS, and naval gunfire. Airborne forces have some limitations that include:

- vulnerability during landing and assembly;
- vulnerability to enemy armor;
- vulnerability to enemy aircraft and air defense weapons;
- sensitivity to weather, including low visibility and high winds; and
- limitations on the number of vehicles and heavy equipment items that can be moved.

Air superiority is desirable for any large scale operation. The fact that airborne units are delivered to the objective area by aircraft, receive fire support from aircraft in the objective area, and rely initially on an air line of communication makes it *essential* that air superiority be maintained during the initial phases of the operation. Planning for airborne operations follows the inverse planning sequence outlined for air assault operations in paragraph J-6a. More detailed information on airborne operations can be found in FM 90-12.

b. Fire Support Considerations

(1) *Communications.* Communications planning is both an Army and Air Force effort. During preparation phases additional communication support may be provided to the airborne force by Army signal units. During air movement the force is dependent upon the airlift force communications means. In the assault, emphasis is placed on the rapid establishment of maneuver and fire support nets so that command and control can be established.

(2) *Intelligence and Target Acquisition.* While airborne units are preparing for the assault, higher headquarters must provide most of the early intelligence information. This information may come from a variety of sources including agents, tactical air

reconnaissance, or aerial photographs. Detailed information concerning enemy forces and terrain in and around the objective area is necessary because airborne units must take maximum advantage of terrain for defense of the airhead. After the assault, combat outposts and armored cavalry elements are principal target acquirers in addition to FIST personnel.

(3) *Fire Support Planning and Coordination.*

(a) Because airborne units are austere equipped and have limited organic fire support, they must rely heavily on close air support and naval gunfire.

(b) The initial phase of the parachute assault will be highly decentralized and very fluid until assault objectives are secured and the airhead can be consolidated for defense. Field artillery and mortars are initially *attached* to maneuver units. For the parachute assault, FA batteries are normally attached to maneuver battalions. Maneuver battalion mortars are normally attached to companies, and company mortars are attached to platoons. As soon as consolidation of the airhead is underway, normal command relationships are resumed and FA support is provided within the context of assigned tactical missions.

(c) Fire planning for an airborne operation is initiated upon receipt of the mission. Concurrently with the development of the plan of maneuver, supporting fires are planned so that fire support is provided throughout the operation.

1. Planning and coordination of fire support for the air movement plan and preassault fires are the responsibility of the joint task force headquarters. Air defense suppressive fires are planned by the joint task force staff both along the flight route and in the objective area. The airborne force FSCoord, however, should insure that preassault airstrikes have been planned against any *other* known or suspect enemy location in the objective area. Attack of enemy forces moving toward the airhead is

essential to provide the airborne units with maximum time to establish the airhead defense.

2. The airborne force plans its own offensive and defensive fires to support the ground tactical plan. Initial FA and mortar positions are selected to provide rapid occupation from the drop zone and the ability to continually support all assault objectives, as additional troops, equipment, and supplies are dropped or air landed. Subsequent FA and mortar positions are selected to provide support of combat outposts and armored cavalry elements beyond combat outposts.

J-8. River Crossings

a. Characteristics of River Crossing Operations

Rivers can have a considerable impact on military operations because they provide a natural line of defense and impose restrictions to surface movement. River crossings can be conducted in the offense, defense, or retrograde. Depending on the tactical situation and the nature of the river obstacle, the force commander may decide to conduct either a hasty or a deliberate river crossing. If the river is viewed as a minor obstacle and the enemy is relatively weak, the force ideally conducts a hasty crossing without changing battle formations. If the river is a major obstacle and/or the enemy is strong, it is necessary to deploy temporarily into a defense-oriented posture, build up combat power, and conduct a deliberate crossing. Command and control may be complicated during the times when commands are "split"; i.e., parts of the same units are on opposite sides of the river. More detailed information concerning the conduct of river crossings may be found in FM 90-13.

b. Fire Support Considerations

Maximum use must be made of fire support means to offset the increased vulnerability of maneuver elements.

(1) *Organization for Combat.* In a deliberate crossing the force temporarily goes

into a defensive posture and needs flexibility to react to unexpected occurrences, so FA should be more centralized. However, GS or GSR units should be prepared to temporarily provide direct support while DS units are displacing. Some augmentation of personnel and communications equipment in the GS or GSR battalion FDC may be necessary.

(2) *Fire Support Planning and Coordination*

(a) While a hasty crossing requires little special preparation, the deliberate crossing normally requires detailed fire planning. Maneuver and fire support plans will probably be formal at brigade or division level. Fires must be planned to support the crossing itself and to support forces in the bridgehead area after crossing. Fires must:

- be planned along routes over which the enemy can counterattack or concentrate;
- suppress enemy ATGM's, tanks, and MG's that may be used to engage friendly crossing sites;
- suppress enemy AD weapons to allow close air and helicopter attacks of enemy positions;
- engage targets of opportunity; and
- deliver fires that support the deception plan.

(b) River crossings depend heavily on screening and obscuring smoke in large amounts. For large crossings, smoke generators or air delivery may be required in addition to FA and mortars. Smoke should extend over enough area so that actual crossing sites are not obvious. Smoke and other munitions may be used to support feints, demonstrations, and dummy crossing sites.

(c) Since movement to crossing sites and the crossing itself may be conducted at night, battlefield illumination may be required.

(3) *Communications.* Handling the fire support communications requirements of GS and GSR battalions that must operate in extra nets while they are engaged in their temporary close support role can be challenging. Local arrangements must be

made to prevent confusion.

(4) *Close Air and Naval Support.* CAS and naval gunfire can be effectively employed to offset the loss in firepower when FA and mortars are displacing.

J-9. Counter guerrilla Operations

a. Characteristics of Counter guerrilla Operations

Counter guerrilla operations may be conducted in conjunction with internal defense and development (IDAD) operations. Under current policies a US force could be deployed to conduct IDAD operations for a limited period of time to accomplish a specific purpose. Counter guerrilla operations are primarily concerned with neutralizing insurgencies that use armed elements to carry out violence and therefore require employment of host country military forces. Effective counter guerrilla operations require a totally integrated effort by all members of the combined arms team. The maximum number of deployed personnel participate in maneuver operations. Maneuver battalion command posts are collocated with FA fire direction centers and target acquisition personnel in operational support bases (OSB). These bases are set up quickly with minimum resources and move often. Since national policy restricts the size of the US force to a level commensurate with the immediate need, it is imperative that the capabilities of maneuver and fire support means be maximized. Maximum advantage should be taken of the mobility provided by aircraft. Coordinating measures frequently used in counter guerrilla operations are:

(1) *Tactical Areas of Responsibility (TAOR).* A TAOR is a specified ground area in which responsibility rests with a single commander. When possible the TAOR coincides with political subdivisions of the host nation to facilitate coordination.

(2) *Areas of Operation (AO).* The AO is that portion of the TAOR needed for military

operations either offensive or defensive pertinent to an assigned mission.

Note: More detailed information concerning counter guerrilla operations can be found in FM 90-8.

b. Fire Support Considerations

(1) *Civilian Population.* Because counter guerrilla operations are carried out in the presence of the civilian populace, extra fire support precautions are needed.

(2) *Target Acquisition Devices.* The mobility, disposition, and tactics of insurgent forces are such that targets are hard to find and attack. Particular emphasis should be placed on all-source intelligence for targeting as utility of sound and flash ranging is reduced.

(3) *Field Artillery and Mortars.*

(a) When practical these weapons should be positioned for mutual support and retain a mass fire capability.

(b) FA may be split (by battery or even platoon) to provide complete coverage. Augmentation of communications and fire direction center personnel and equipment must be provided if batteries are split.

(c) Since a minimum of maneuver personnel will be available for security, FA and mortar firing unit personnel will provide at least part of their own defense.

(4) *Close Air and Naval Support.* These means of fire support are valuable in counter guerrilla operations but their use may be restricted by national policy.

J-10. Amphibious Operations

a. Characteristics of Amphibious Operations

An amphibious operation is an attack launched from the sea by naval and landing forces embarked in ships or other craft for the purpose of landing on a hostile shore. A successful amphibious assault achieves surprise and concentrates an overwhelming force at a point of enemy weakness. The

assaulting force must build combat power from an initial zero to full striking power as it drives toward objectives. The amphibious force is a lucrative target to conventional fires during ship-to-shore movement. The amphibious operation requires detailed planning; precise timing in air, naval gunfire, and FA support; and effective command relationships. A naval officer is normally the commander of the amphibious task force (CATF). Troop components, ground and air, are called the landing force and are commanded by the landing force commander. The CATF exercises the degree of authority over the entire force that is necessary to insure success. Subject to this overall authority, the responsibility for conduct of operations ashore is vested in the landing force commander. Planning and execution of the landing and assault are primarily his concern. An amphibious operation is conducted in five phases: planning, embarkation, rehearsal, movement, and assault. For more details on the support of amphibious operations see Fleet Marine Force Manual 7-4.

b. Fire Support Considerations.

(1) *Fire Support Planning.* The joint amphibious task force (JATF) commander is responsible for planning the employment of all CAS, naval gunfire, and FA fires. He insures that coordinated naval gunfire and air plans are prepared for all phases of the operation. He also establishes a task force supporting arms coordination center (SACC) that plans and coordinates fires for the task force during planning and execution of the operation. The landing force commander determines landing force requirements for air, naval gunfire, FA, and mortars, and prepares the artillery fire support plan.

(2) *Fire Support Coordination.* The SACC of the task force has responsibility for coordination of all fires during the assault. When control is passed ashore the landing force FSE assumes responsibility for all fire support coordination.

(3) *FA and Mortars.* FA and mortars are

dispersed throughout assault elements to enhance survivability. FA batteries might be attached initially to maneuver battalions. Rehearsals include communications checks among FIST's, FDC's, and FSO's. FIST's and FSO's must be proficient in requesting and directing naval gunfire and CAS fires. FA lands as soon as conditions permit. It is employed boldly to get fire support functioning ashore as soon as possible. If coastal topography permits, consideration should be given to positioning FA on offshore islands to support the amphibious assault.

(4) *Observation.* Air observers are employed to complement capabilities of ground observers. During the initial stages of the ship-to-shore movement, air observers in

ship-based aircraft may provide the only observation capability.

(5) *Counterfire.* Plans usually provide that commanders of DS field artillery units are responsible for planning and execution of counterfires within their zones of action until the force FA headquarters is established and prepared to assume control. All units of the landing force have responsibility for collecting and forwarding shell reports.

(6) *Logistics.* The plan of logistical support for the FA must complement the plan of fire support in order to provide effective employment of FA. Logistical support is based on capabilities of combat service support agencies of the landing force as well as the concept of operations.



Appendix K The Tactical Fire Direction System (TACFIRE)

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Appendix K

Tactical Fire Direction System (TACFIRE)

WHY

- TACFIRE provides a dramatic advance in the capability of the field artillery to respond to the fire support requirements of the supported force.

WHAT

- This appendix tells you:
 - what TACFIRE means to the combined arms team;
 - the components of TACFIRE and their functions;
 - the capabilities of TACFIRE; and
 - the continuity of operations for TACFIRE.

Section I. THE COMBINED ARMS TEAM AND TACFIRE

Our potential enemies can field armies consisting of highly mobile armored and mechanized units supported by numerous field artillery weapons. To offset their numerical superiority and defeat them, the combined arms team must use superior tactics, modern equipment, and effective command and control. In support of the combined arms team, the FA must:

- Assimilate large volumes of target intelligence.
- Develop targets.
- Select the optimum weapon system, munition, and volume of fire from among many possible alternatives.
- Be able to rapidly concentrate firepower to destroy enemy forces.
- Facilitate maneuver by suppression.
- Survive on the battlefield.

TACFIRE is an automated system that permits the accomplishment of these functions with great speed and efficiency in support of the offensive and defensive operations of the combined arms team.

K-1. Fire Support Planning and Coordination

TACFIRE represents a dramatic advance in the FA's capability to perform its fire support planning and coordination role. The result for the commander is a significant increase in combat power through the optimizing of fire support. The TACFIRE will:

- Facilitate concurrent planning by improving exchange of target intelligence and battlefield control data between fire support (FS) and maneuver commanders.
- Improve target priority assignment during fire planning and target engagement.
- Consider all FA, naval, air, and missile weapon systems and recommend weapons, munitions, and volume of fire.

K-2. TACFIRE Support of the Combined Arms Team

- Provide for high speed FS coordination by automated consideration of FS coordination measures and dissemination of coordinating information to fire support officers.
- Provide for computerized dissemination of decisions.

The vast improvements realized by the introduction of the TACFIRE will provide the commander near real-time integration of fire support with maneuver.

This automated integration of fire support with maneuver will occur at all levels from company to corps (fig K-1). At each echelon, the fire support agency collocated with the maneuver operations center will have access to the central computers of the supporting FA unit. The TACFIRE will provide automated support of

- offensive operations,
- defensive operations, and
- counterfire.

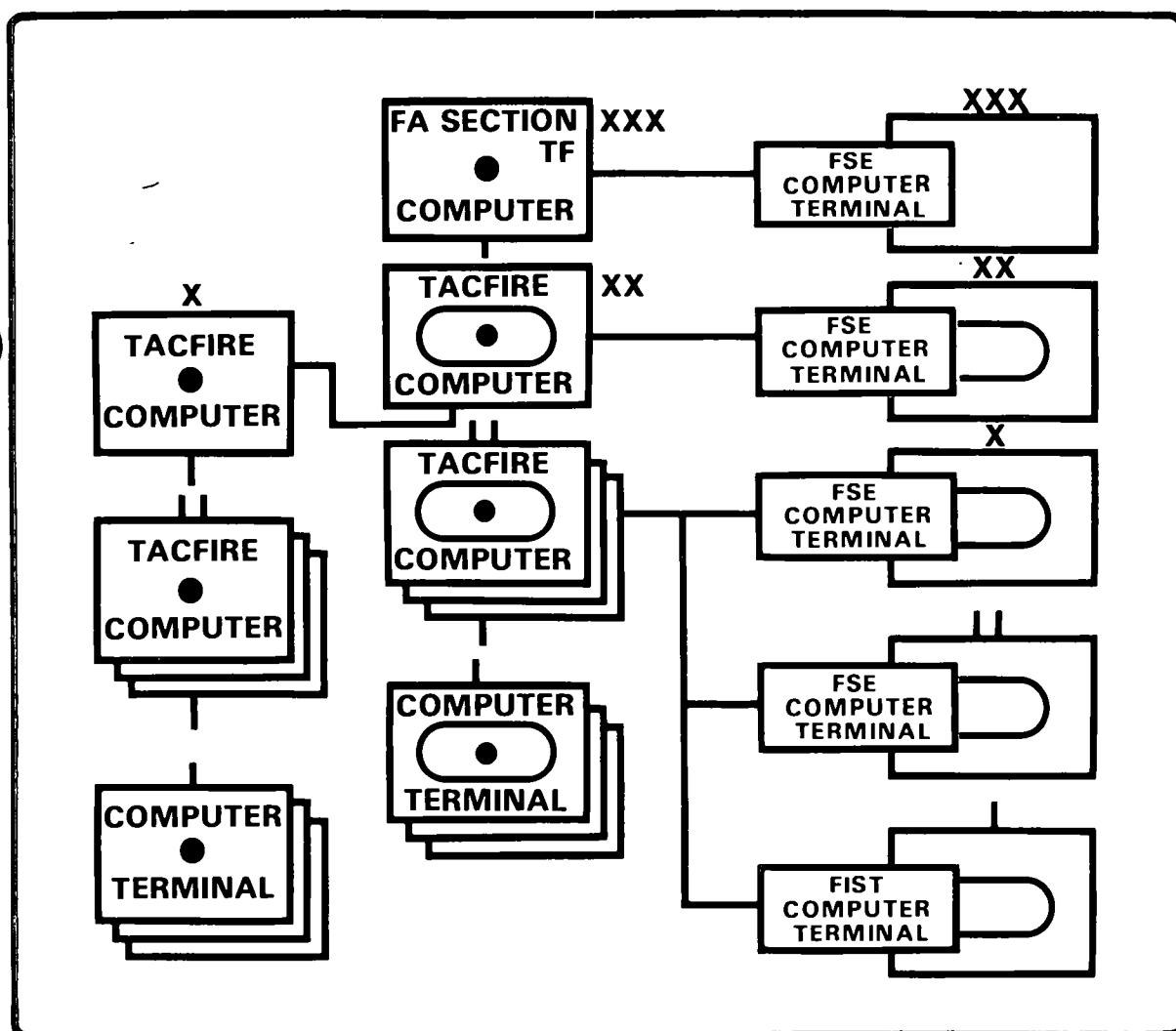


Figure K-1. Automated integration of fire support with maneuver.

a. Support of the Offense

During the attack, the combined arms team observes the fundamentals of the offense:

- See the battlefield.
- Concentrate combat power.
- Suppress enemy weapon systems.
- Shock, overwhelm, destroy the enemy.
- Attack deep into enemy rear.
- Provide continuous, mobile support.

TACFIRE improves the field artillery's ability to support these offensive fundamentals by:

- more rapidly gathering and correlating target intelligence;
- speeding the delivery of surprise fires and, with other developments, improving the accuracy of fires;
- facilitating massed fires and time of target (TOT) missions;
- timely fires planning;
- rapid delivery of precision fire to destroy fortifications or materiel;
- facilitating the delivery of immediate counterfire; and
- using optimum quantities and types of fire support resources to do the job.

b. Support of the Defense

Successful defense depends on intelligence, concentration, and combined arms teamwork. TACFIRE increases FA support of the covering force and contributes to effective delivery of fires immediately forward of the FEBA.

In support of the covering force, TACFIRE:

- correlates targeting information;
- employs long-range fires using all available FS systems (FA, air, missile, naval); and
- provides for efficient transfer of target intelligence to defending units during operations with the covering force or passage of lines.

After withdrawal of the covering force, TACFIRE facilitates implementation of the defensive fire plan, concentration of firepower, and engagement of targets of opportunity.

K-3. Counterfire

In support of tactical operations, the FA suppresses or neutralizes hostile indirect fire means. The TACFIRE enhances the counterfire capability of the combined arms team by:

- collecting counterfire information,
- producing targets, and
- preparing counterfire fire missions and fire plans.

a. Collecting Counterfire Information

Counterfire information is collected from the following sources by use of the TACFIRE:

- the fire support element,
- maneuver elements via FSO's,
- aerial observers,
- radar sections organic to maneuver units,
- the div arty target acquisition battery,
- FA battalion operations or intelligence personnel, and
- FIST's.

This information is used to produce targets.

b. Target Production

The TACFIRE equipment at div arty receives counterfire information from all sources and is used to develop targets by:

- solving shelling reports (SHELREPS);
- combining two similar targets into one;
- sorting stored intelligence reports to extract artillery, mortar, or rocket and missile type reports;
- preparing overlays; and
- placing counterfire targets in a counterfire target list.

c. Counterfire Fire Missions

Once counterfire targets are developed, they are either attacked immediately or digitally transmitted to FA battalions for inclusion in the on-call counterfire fire plan. Counterfire target development and fire planning using the TACFIRE enable the FA to more effectively support the scheme of maneuver or defense by increasing suppression of the enemy's direct or indirect

fire means and by more fully utilizing a fire unit's time.

K-4. Intelligence

a. TACFIRE receives target intelligence (intel) reports from various sources, uses them for fire planning or fire missions, and disseminates them to FA and maneuver forces. Sources include:

- electromagnetic—FA counterbattery/mortar radar, moving target locating radar (MTLR), electronic warfare (EW) units;
- electroacoustical—sound ranging;
- imagery—photo, infrared; and
- human—AO, FO, flash ranging, or end of mission reports submitted by forward observers.

These sources input data to TACFIRE by using high speed remote computer terminals connected to standard Army communications equipment. This intel data is processed by multiecheloned automatic data processing centers and the results are returned to all FA agencies and maneuver organizations via their FSO. Using TACFIRE, this cycle requires only seconds as opposed to minutes or hours in the manual system.

b. Artillery target intel is automatically disseminated by TACFIRE directly to all FA agencies and to maneuver commanders via FSO's to provide them

- real time intel;
- intel reports that fall within the zone of responsibility;
- intel reports that are of a certain description (armor, personnel, etc.) and fall within a certain area; and
- field artillery mission fired reports.

K-5. Tactical Nuclear Operations

a. In a nuclear environment, the FA provides employment recommendations to the combined arms commander. TACFIRE supports his decisionmaking by:

- performing target analysis to recommend weapon systems, munitions, and yields;
- considering all available weapon systems and munitions; and
- generating a preferred and several next best alternatives.

Once a decision has been made, TACFIRE facilitates its rapid implementation by high speed communication of the results. The nuclear strike warning, for example, need not be released until just minutes prior to the attack due to the rapidity of its dissemination. Fallout prediction by TACFIRE forms the basis for this warning.

b. Geographic concentration of friendly units is always a critical vulnerability consideration. In a nuclear environment, it is even more so. Vulnerability analysis performed by the TACFIRE computer provides the maneuver commander with an estimate of how vulnerable various force configurations are to nuclear attack.

K-6. The Future

TACFIRE is guiding the production of other FA equipment that will further improve the ability of the FA to maximize the commander's combat power. Major improvements in FA equipment are coming in the functional area of:

□ TARGET ACQUISITION

Counterbattery/mortar radar for target acquisition.

Laser rangefinder/designator to improve target location and guide "smart" projectiles.

Sound ranging target acquisition equipment.

□ COMMAND AND CONTROL

A battery computer system.

Automated meteorological station.

□ IMPROVED FA WEAPON SYSTEMS

Greater range.

Improved mobility.

□ IMPROVED MUNITIONS

Section II. TACFIRE EQUIPMENT

K-7. TACFIRE and the Field Artillery System

a. The TACFIRE is composed of central computers and computer access remote terminals. The FA battalion, division artillery, FA brigade, and the corps FA section are provided with central computers. Forward observers, FIST chiefs, fire support officers, S3's, and the fire support elements use remote terminal equipment to obtain data processing services from the central computers.

b. The FDO's at all levels gain access to the computer by operating the computer console from inside the computer shelter.

K-8. Division Artillery Type TACFIRE Computer

a. Although its name implies that it is used by div arty only, this computer is used at corps artillery, div arty, and FA brigade. The div arty type computer has these major components:

- ☐ Operator display.
- ☐ Processing (the computer group).
- ☐ Ancillary computer equipment.
- ☐ Power source.
- ☐ Communication security system.

These components are mounted in two equipment shelters, each transported by a 5-ton truck. Digital communication over any standard Army communication equipment (AN/VRC-46, AN/GRC-106, field wire, etc.) provides for input of data into the computer and return of the results to the terminals. Encryption and decryption of messages are automatically performed by COMSEC equipment.

b. The div arty type TACFIRE computer performs the following general functions:

- ☐ Tactical fire control to recommend

battalions to fire, munitions, and volume of fire.

- ☐ Development and processing of FA target intelligence.
- ☐ Nonnuclear fire planning in support of the maneuver force.
- ☐ Survey scheme solution and trig list storage.
- ☐ Fire support element target analysis, nuclear fire planning, fallout prediction, and vulnerability analysis.
- ☐ Receipt, storage, and distribution of meteorological data.

K-9. Battalion TACFIRE Computer

a. The battalion TACFIRE computer has almost the same equipment as the div arty type computer. The components are physically the same except there are fewer of them at the battalion. The significant difference is in the software (programs) available at each level.

b. Like the div arty type computer, the battalion computer receives digital communications from its associated terminals via standard communications equipment, performs the required processing, and disseminates the results to the same or other terminals. Encryption and decryption of messages are automatic. The battalion computer is housed in one equipment shelter transported on a 5-ton truck.

c. The battalion computer focuses on the support of a maneuver brigade or reinforcement of another FA battalion. It performs the following general functions:

- ☐ Collection of FA target intelligence.
- ☐ Tactical fire control to recommend batteries, munitions, and volume of fire.
- ☐ Technical fire control (ballistic solution).
- ☐ Nonnuclear fire planning in support of the maneuver brigade.
- ☐ Survey scheme solution, trig list storage, and data transmission.
- ☐ Receipt and storage of meteorological data.

K-10. Variable Format Message Entry Device (VMED)

a. The VMED is a two-way computer terminal found throughout the TACFIRE. It consists of these components assembled into a single unit:

- Operator display/scope and printer.
- Digital data terminal.
- COMSEC equipment.
- Communications device.

b. The VMED is only a terminal—it performs no processing. The VMED allows the operators (S3 and FSO) to access the div arty and battalion computers to:

- receive copies of incoming calls for fire;
- perform fire support coordination;
- obtain the status of all assigned fire units to include grid, azimuth of lay, ammunition count, and current mask and registration data;
- obtain a copy of the current fire support coordination measures;
- request and conduct fire using grid, polar, or shift-from-known-point target location techniques;
- perform nonnuclear fire planning to obtain a target list, determine a method of attack, prepare the schedule of fires, and disseminate the plan to the fire units; and
- receive the SITREP, which includes total ammunition expenditures since the last report.

c. The VMED communicates over all standard Army communications equipment and is transported by any 3/4-ton or larger vehicle, normally the vehicle of its principal user. Encryption and decryption of transmitted or received messages are automatic.

K-11. Digital Message Device (DMD)

a. The DMD is a two-way device used mostly by FO's. It is a small, handheld, battery-powered display device that enables the FO to:

- request and conduct fire using grid, polar, or shift-from-known-point target location techniques;
- transmit fire planning targets to the TACFIRE computer;
- enter his own location into the battalion computer;
- receive the message to observer; and
- compose, transmit, and receive plain text messages or intelligence reports.

b. The DMD communicates over standard Army communications equipment (AN/PRC-77, AN/VRC-46, field wire, etc.). The FO does not currently use a COMSEC device, so authentication and encryption of classified information are handled by existing codes.

K-12. Battery Display Unit (BDU)

The BDU is a one-way device capable of receiving, decrypting, and printing messages received from a TACFIRE computer. Unlike the VMED, the BDU cannot transmit messages. The BDU operates over standard Army communications equipment and consists of:

- one digital data terminal,
- one printer, and
- COMSEC equipment.

These components are assembled into a single unit and are transported by a vehicle organic to the battery FDC.

K-13. Battery Computer System (BCS)

The BCS is a technical fire direction computer designed to interface with the TACFIRE. It features a widely expanded, more rapid computational capability, and gun display units (GDU) that display firing data to howitzer section crews almost instantaneously. The BCS will be fielded by 1981.

K-14. Basis of Issue

The basis of issue for TACFIRE equipment is shown in figure K-2.

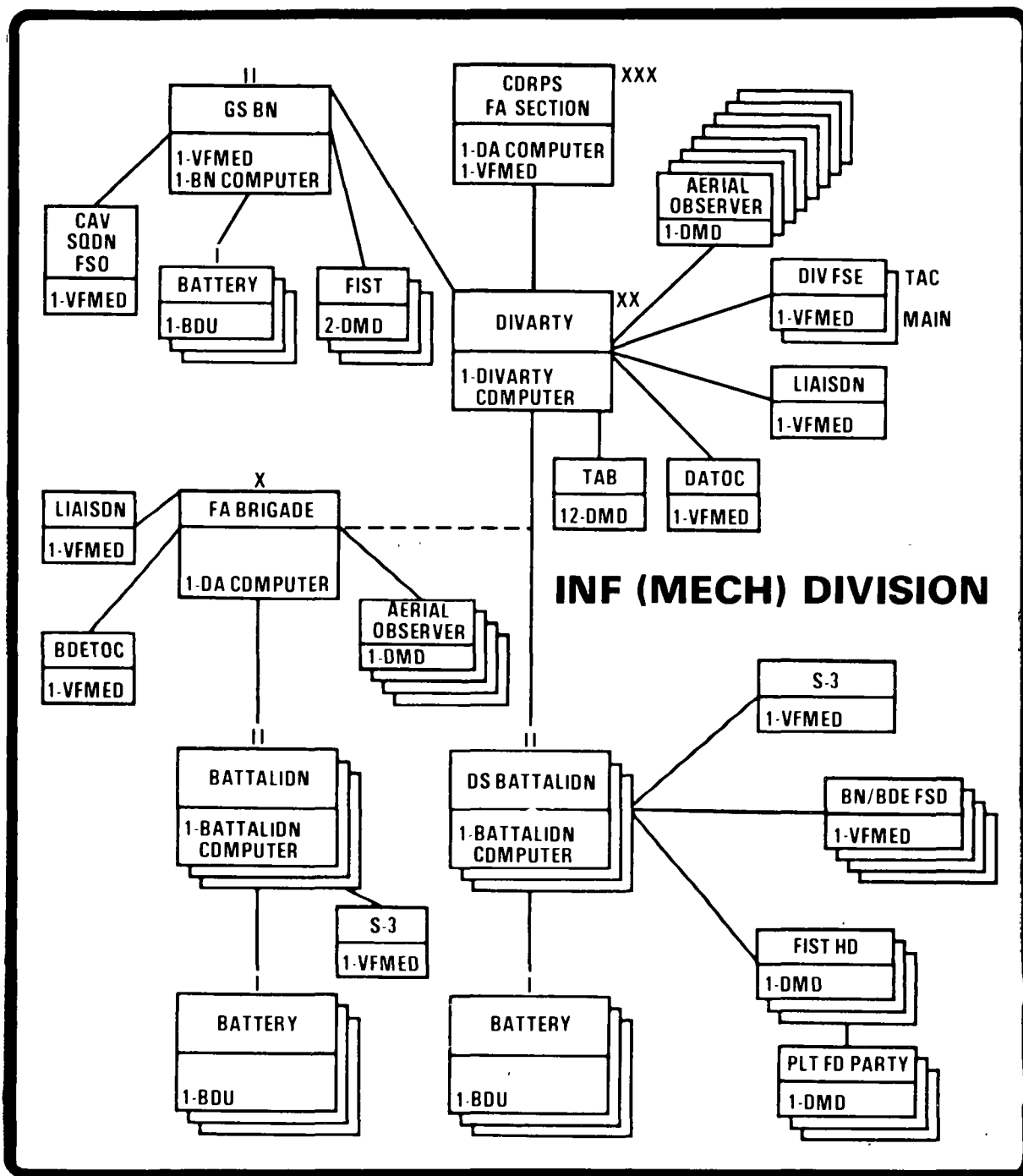


Figure K-2. Basis of issue for TACFIRE equipment.

Section III. TACFIRE CAPABILITIES

TACFIRE is a management system capable of handling:

- flexible communication;
- tactical fire control;
- technical fire control;
- development of FA target intelligence;
- fire planning;
- solution of survey schemes and storage of survey data;
- support of the FA fire support elements; and
- receipt, storage, and distribution of meteorological data.

K-15. Efficient Communication

By increasing communications speed and accuracy, TACFIRE significantly improves the efficiency of the command and control system. Advanced capabilities such as computerized data transmission, automatic encryption, and automatic relay contribute to secure, high speed, and flexible communication.

a. Data Transmission

The TACFIRE computer converts standard FA terminology typed on a display screen to communication signals and

transmits it to a designated addressee. An entire fire planning target list consisting of approximately 25 targets can be transmitted in about 3 minutes by the TACFIRE computer to the FSO at a maneuver brigade FSE.

b. Automatic Encryption and Decryption

The TACFIRE computers and all terminal equipment, excluding the FO's digital message device, automatically encrypt and decrypt messages. This is accomplished by standard Army COMSEC devices attached to each computer and terminal unit.

c. Automatic Relay of Messages

The TACFIRE computer can automatically relay an incoming message to another operator on another communications net. This capability is used to overcome communication difficulties or to provide FSO access to the div arty computer. For example, an FSO with a maneuver battalion (fig K-3) may extract targets stored in the div arty computer that have been reported in his maneuver battalion's zone of responsibility. He does this by preparing a request on the display scope of his VFMED and transmitting it to his parent FA battalion computer, which automatically relays it to div arty. The results coming back from div arty are automatically relayed to the requesting FSO. This normally occurs within 1 minute.

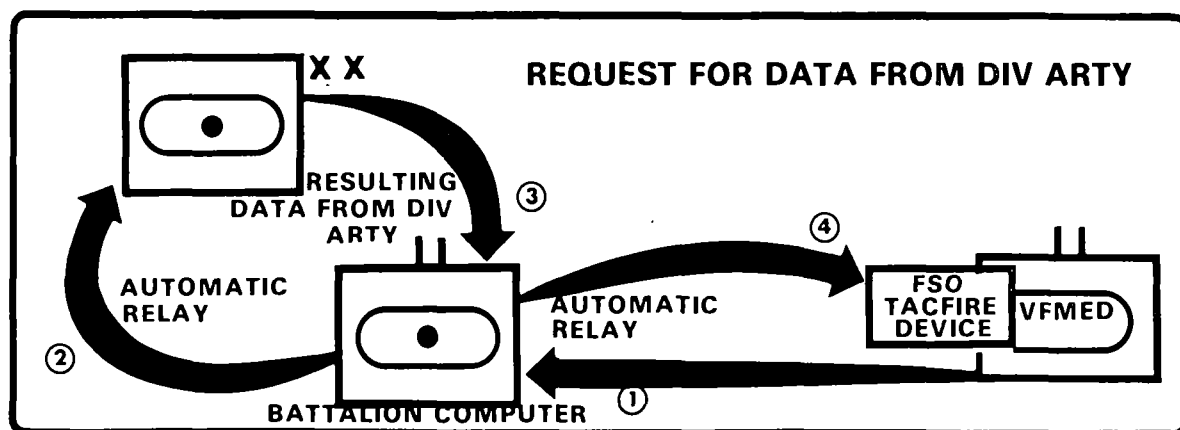


Figure K-3. FSO automatic relay.

K-16. Automated Tactical and Technical Fire Control

a. At battalion, the TACFIRE computer's tactical and technical fire control function provides the processing necessary to:

- receive the call for fire;
- perform tactical fire control to recommend fire units, optimum munitions, and volume of fire;
- evaluate the target in respect to stored fire support coordination measures such as the zone of responsibility;
- perform technical fire control for all FA munitions and weapon calibers;
- prepare a request for additional fire for transmission to a reinforcing battalion or div arty as necessary;
- prepare the message to observer;
- automatically notify the FSO of fire missions terminating in his zone;
- process subsequent corrections; and
- perform end of mission notification and file update functions.

b. At div arty, the TACFIRE computer provides the processing necessary to:

- receive requests for additional fire;
- perform tactical fire control to recommend fire units, munitions, and volume of fire;
- evaluate the target in respect to fire support coordination; and
- prepare fire orders for transmission to the subordinate battalions and requests for additional fire for transmission to FSE.

K-17. Artillery Target Intelligence (ATI)

a. The TACFIRE develops targeting data via its ATI function. The battalion computer:

- receives intel reports (coordinate, polar, and SHELREP) from all organic resources;
- forwards these reports to div arty; and
- searches the div arty artillery target intel file to retrieve targets for use in fire planning.

b. The div arty computer provides the processing required for the development and dissemination of targeting data. This processing includes:

- receiving and storing target intel reports in the ATI file,
- target combination,
- target buildup notification,
- automatic fire mission generation based upon a target intel report,
- solution of SHELREPS,
- target sorting, and
- automated dissemination of ATI information to FA and maneuver (via FSO) organizations.

K-18. Fire Planning

TACFIRE at battalion and div arty is used to store a target list, determine a method of attack, and prepare a schedule of fires. When div arty determines the schedule of fires; e.g., for counterfire, they transmit it to the selected battalions who compute fire commands and retransmit it to the FSO's for coordination. The fire commands are transmitted to the batteries by the battalion TACFIRE computer. Battalion may perform autonomous fire planning by preparing the target list, determining a method of attack, computing the schedule of fires, and determining fire commands using the TACFIRE computer. For example, the battalion can prepare and transmit a suppression plan of 6-10 targets for an FO within 3 minutes after receipt of the final target.

K-19. Survey

The TACFIRE computer at div arty or battalion stores survey trig lists, transmits survey data to remote subscribers, and solves survey schemes. Trig point data is entered into the TACFIRE computer from any VFMED terminal and is transmitted to any other TACFIRE terminal upon request.

Survey personnel share use of the FSO's, S3's, or FSE's to input or request transmission of data.

K-20. Support of FA Fire Support Element (FSE)

a. The div arty computer performs all the processing required by the FSE located in the division main and tactical command posts. The FSE obtains this processing in the same manner as an FSO, by using a VFMED terminal.

b. The FSE, using its VFMED terminal and the TACFIRE computer:

- ☐ receives requests for additional fires from div arty and evaluates them;
- ☐ performs HE, nuclear, and chemical target analysis to recommend to the maneuver G3 appropriate weapon systems, munitions, and volume of fire;
- ☐ performs nuclear vulnerability studies;
- ☐ performs nuclear fire planning;
- ☐ performs fallout prediction;
- ☐ prepares effective downwind messages for manual fallout prediction; and
- ☐ Inputs intelligence to div arty.

c. FSE target analysis considers these delivery systems:

- ☐ Tactical aircraft and munitions; e.g., F4C or F105 armed with CBU-7A.
- ☐ FA rockets and missiles; i.e., Lance, HJ, Pershing.
- ☐ Naval gunfire.
- ☐ FA cannon.

Section IV. CONTINUITY OF OPERATIONS

Continuous support of the ground gaining arms is required. The TACFIRE's reliability, ease of maintenance, and mutual support features contribute to continuity of operations.

K-21. Reliability and Maintenance

Numerous organizational and design tests of TACFIRE equipment conducted by field artillerymen have shown the system to be highly reliable and easily maintained. Direct support (DS) maintenance, located at the division support command, provides contact teams who go forward to repair or direct exchange modular components. General support (GS) maintenance, consisting of a special repair activity, repairs modular components not allocated for repair by contact teams. GS maintenance is located in the army area. Depot maintenance, located in CONUS, can perform repair or rebuild of any item of TACFIRE equipment. Repair parts and float modular components are kept on hand by the division support command contact team. Each FA battalion also maintains a supply of spare parts. Replenishment of depleted stocks of these items is provided through normal electronics supply channels.

K-22. Mutual Support

Mutual support is the method employed to continue the mission in the event of normal computer displacement or a total TACFIRE computer failure. It is accomplished by one TACFIRE computer performing its own duties as well as those of another computer. Mutual support is conducted at battalion and div arty levels by:

- ☐ Exchanging data on fire units, fire missions, observers, fire support coordination geometry, fire planning, and communications (this initial exchange of data requires less than 10 minutes); and
- ☐ Updating this data as changes occur (this update is automatic; changes entered into one computer are automatically transmitted in the other computer).

Battalion mutual support consists of having two computers exchange data and

each being prepared to assume the duties of the other at any time. For example, a DS and its associated reinforcing (R) battalion may provide mutual support for each other. If the DS battalion's computer is being displaced, the R computer performs its own TACFIRE duties, as well as those of the DS battalion. Once mutual support is implemented, the terminals of the displacing DS battalion computer communicate with and obtain data processing services from the mutual support reinforcing battalion just as though it were their parent computer. When the DS battalion computer is again operational, mutual support is discontinued.

Div arty mutual support is conducted in the same manner as battalion. The FA brigade's div arty type computer provides mutual support for div arty. The procedures are the

same as at battalion except that somewhat different data is exchanged.

The TACFIRE provides an improvement in the fire planner's ability to handle masses of battlefield data. It allows the fire support agencies at all levels to keep abreast of combat operations while providing effective and responsive fire support. TACFIRE does this through its ability to assimilate target intelligence and to perform target analysis and technical and tactical fire control at computer speed. TACFIRE's command and control capability relieves the FA commander and S3 of the burden of routine decisionmaking (S3 fire order) and allows them to concentrate on those functions requiring military judgment; e.g., changes in tactical missions.

Appendix L

Glossary

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Appendix L

Glossary

Some of the terms, definitions, and abbreviations used in this manual are not now included in the appropriate military dictionaries and/or lists of brevity codes. Action is underway to have them approved for inclusion in those documents.

L-1. Terms and Definitions.

Adjustment of fire—a process used in field artillery and naval gunfire operations to obtain the correct bearing, range, and height of burst (if time fuze is not used) when engaging a target by observed fire. (See also Spot in JCS Pub 1.)

Air observer—an individual whose primary mission is to observe or take photographs from an aircraft in order to adjust indirect fires or obtain military information.

Air observer's adjustment—the correcting of fires while positioned in an airborne vehicle.

Airspace coordination area—in fire support operations, a safety measure that establishes a three-dimensional area (corridor or lane) that is reasonably safe from friendly surface-delivered nonnuclear fires.

Airspace management element—a functional component of Army elements within the corps or division TOC involved with coordinating, integrating, and regulating the actions of Army airspace users with those of non-Army users.

Army training and evaluation program—a Department of Army publication providing guidance for training and evaluating units. It provides a list of tasks, ranked according to criticality, that must be accomplished by each element of the unit for it to accomplish its TOE mission. In addition to the tasks, it lists corresponding training objectives, references, conditions for testing, and standards that must be attained.

Battery operations center—in FA operations, a facility established to serve as an alternate fire direction center and as the battery command post.

Collateral damage (nuclear)—undesirable civilian personnel injuries or materiel damage produced by the effects of friendly nuclear weapons.

Counterfire—fire intended to destroy, neutralize, or suppress indirect fire systems.

Dedicated battery—in FA operations, a cannon battery whose total firepower is immediately available to suppress enemy direct fire weapons that threaten a designated maneuver company team.

Destruction fires—fire delivered for the sole purpose of destroying targets.

Division artillery—field artillery that is permanently an integral part of a division. For tactical purposes, all FA placed under the command of a division commander is considered division artillery.

Field artillery tactical operations center—a facility within which are merged targeting, operations, and fire control for FA support operations.

Fire support coordination—the planning and executing of fire support so that targets are adequately covered by a suitable weapon or group of weapons.

Fire support officer—in fire support operations, this officer is a full-time coordinator of all fire support and is the FA commander's representative at the supported headquarters.

Fire support team—in fire support operations, a team composed of a team chief (FA lieutenant) and the necessary additional personnel and equipment required to request, coordinate, and direct fire support efforts at company/troop level.

Free-fire area—in fire support operations, an area into which any fire support means may deliver fires without coordination.

Immediate suppressive fire—in combined arms operations, direct fire weapons and supporting FA units respond immediately after the enemy has fired from or has been seen and can fire from a given location.

List of targets—a tabulation of confirmed or suspect targets maintained by any echelon for information and fire support planning purposes.

Marking fire—in fire support operations, fires placed on, above, or in the vicinity of a surface target for the purpose of identification.

Neutralization fire—fires delivered to hamper and interrupt movement and/or the firing of weapons.

No-fire area—in fire support operations, a designated area into which neither fires nor effects from fire will occur. The exceptions are: (1) When the establishing headquarters approved fires (temporarily) within the NFA on a mission basis; (2) When the enemy force within the NFA engages a friendly force, the commander may engage the enemy to defend his force.

Obscuration fire—a category of fire using smoke and WP directly on or near the enemy with the primary purpose of suppressing the observer and minimizing his vision both within and beyond his position area.

Offset registration—in FA operations, registering from a supplementary position.

Package (nuclear)—in nuclear operations, a discrete grouping of nuclear weapons by specific yield planned for employment in a specified area during a short time period.

Program of targets—in fire support operations, a number of targets of similar nature (e.g., counterfires). A program of targets may be designated using the nature of the targets involved or a nickname.

Quick-fire channel—this term applies to an FA unit assigned the tactical mission of GSR. Force field artillery headquarters has first priority and the reinforced battalion has second priority on the fires of the GSR bn. The quick-fire channel (when approved by higher headquarters) provides direct communications between the reinforced and GSR battalions for immediate fire requests. The GSR battalion will respond immediately to the request if not firing for force FA hqs and if force FA hqs has not placed other restrictions on its fires. FA radio communications should be established as follows:

The GSR bn operates in the CF net of the reinforced battalion.

The GSR LO at the reinforced battalion operates in the CF net of the GSR battalion.

Quick (hasty) fire plan—in fire support operations, a fire plan prepared quickly at a lower echelon in support of a tactical operation and containing the necessary elements of a fire plan.

Zone fire—field artillery fires that are delivered in a constant direction at several quadrant elevations.

L-2. Abbreviations and Acronyms.

AAG—Army artillery group (enemy forces)
 AAGS—Army air-ground system
 ACA—airspace coordination area
 ACR—armored cavalry regiment
 AD—air defense
 ADA—air defense artillery
 ADFT—artillery direct fire trainer
 ADM—atomic demolition munitions
 ADP—automatic data processing
 AFAWS—Air Force Air Weather Service
 AFCC—Air Force component commander
 AFCH—Air Force component headquarters
 AFSCORD—assistant fire support coordinator

AGOS—air-ground operations system
 AH—attack helicopter
 AIO—artillery intelligence officer
 ALO—air liaison officer
 AME—airspace management element
 ANGLICO—air and naval gunfire liaison company
 AO—area of operations
 AOBSR—air observer
 ARM—antiradiation missiles
 ARTEP—Army training and evaluation program
 ASP—ammunition supply point
 ASRT—air support radar team
 ATG—antitank gun
 ATGM—antitank guided missile
 ATP—Army training program
 ATT—Army training test
 AWACS—airborne warning and control system

BCS—battery computer system
 BE—base ejection (FA projectile)
 BICC—battlefield information control center
 BOC—battery operations center

CAS—close air support
 CATF—commander of the amphibious task force
 CATTS—combined arms tactical training simulator
 CBU—cluster bomb units
 CDD—collateral damage distance
 CEOL—Communications-Electronics Operation Instructions
 CEP—circular error probable
 CESO—communications-electronics staff officer
 CEV—combat engineer vehicle
 CEWI—Combat Electronics Warfare Intelligence
 CFA—covering force area
 CFL—coordinated fire line

CLGP—cannon-launched guided projectile (Copperhead)
 CM—commander's manual
 COMSEC—communications security
 COP—command observation post (enemy forces)
 Corps arty—corps artillery
 CP—command post
 CPHHC—card programable handheld calculator
 CPX—command post exercise
 CRC—control and reporting center
 CS—combat support
 CRP—control and reporting post
 CSR—controlled supply rate (ammunition)
 CSS—combat service support
 CTOC—corps tactical operations center
 CV—Chaparral/Vulcan

DAG—division artillery group (enemy forces)
 DASC—direct air support center
 DF—direction finding
 Div arty—division artillery
 DMD—digital message device
 DPICM—dual purpose improved conventional munition
 DS—direct support
 DSA—division support area
 DTG—date-time group
 ECCM—electronic counter-countermeasures
 EMP—electromagnetic pulse
 EW—electronic warfare
 EWIDC—electronic warfare intelligence operations center

FAAOBSR—field artillery air observer
 FAASV—field artillery ammunition support vehicle
 FAC—forward air controller
 FACP—forward air control post
 FADAC—field artillery digital computer
 FAMAS—field artillery meteorological acquisition system

FAS—field artillery section (corps)
 FASCAM—family of scatterable mines
 FATOC—field artillery tactical operations center
 FB—firing battery
 FDC—fire direction center
 FEBA—forward edge of the battle area
 FFA—free-fire area
 FIST—fire support team
 FISTV—fire support team vehicle
 FLO—fighter liaison officer
 FLOT—forward line of own troops
 FM—field manual; frequency modulated
 FO—forward observer
 FOV—forward observer's vehicle
 FPF—final protective fires
 FS—fire support
 FSA—fire support area (naval gunfire)
 FSCL—fire support coordination line
 FSCOORD—fire support coordinator
 FSE—fire support element
 FSL—field storage location
 FSO—fire support officer
 FSS—fire support station
 FTX—field training exercise

GDU—gun display unit
 GLLD—ground laser locator designator
 GMET—graphical munitions effects table
 GS—general support
 GSR—general support reinforcing
 GSRS—general support rocket system
 G/VLLD—ground/vehicular laser locator designator

H&I—harassing and interdiction (fires)
 HE—high explosive
 HHT—headquarters and headquarters, troop
 HUMINT—human intelligence
 ICM—improved conventional munition
 IDAD—internal defense and development
 ITI—immediate transient incapacitation
 ITV—improved TOW vehicle

JATF—joint amphibious task force
 JMEM—joint munitions effectiveness manual
 JMEM/SS—joint munitions effectiveness manual for surface-to-surface weapons
 JTFH—joint task force headquarters
 LC—line of contact
 LITR—low-cost, indirect-fire training rounds
 LP—listening post
 LSD—least separation difference

MBA—main battle area
 met—meteorology
 MI—military intelligence
 MOUT—military operations on urbanized terrain
 MRL—multiple rocket launcher
 MSD—minimum safe distance
 MTLR—moving-target-locating radar

NBCE—nuclear, biological, and chemical element
 NCA—National Command Authority
 NCS—net control station
 NFA—no-fire area
 NGF—naval gunfire
 NGLO—naval gunfire liaison officer

OAS—offensive air support
 OFT—observed fire trainer
 OJT—on-the-job training
 O/O—on order
 OP—observation post
 OPCON—operational control
 OPFOR—opposing forces
 OPLAN—operation plan
 OPORD—operation order
 OPSEC—operations security
 ORTT—operational readiness training test
 OSB—operational support base

PADS—position and azimuth determining system
 PAL—permissive action link
 PCL—prescribed chemical load
 PD—point detonating
 PER—projectile expenditure rate
 PHOTINT—photo intelligence
 PLSS—precision locator strike system
 PNL—prescribed nuclear load
 POL—petroleum, oils and lubricants

R—reinforcing
 RAG—regimental artillery group (enemy forces)
 RAP—rocket-assisted projectile
 RATELO—radiotelephone operator
 RATT—radioteletypewriter
 RD—radius of damage
 REC—radio-electronic combat
 RFA—restrictive fire area
 RFL—restrictive fire line
 RLO—reconnaissance liaison officer
 RPV—remotely piloted vehicle
 RSR—required supply rate
 RT—radius of target

SACC—supporting arms coordination center
 SADARM—sense and destroy armor
 SASP—special ammunition supply point
 SCAR—strike control and reconnaissance
 SEAD—suppression of enemy air defense
 SFCP—shore fire control party
 SIGINT—signal intelligence
 SLAR—side-looking airborne radar
 SM—soldier's manual
 SOP—standing operating procedure
 SP—self-propelled
 SQT—skill qualification test
 SRP—sensor reporting post
 SSB—single sideband

TA—target acquisition
 TAB—target acquisition battery

TACC—tactical air control center
TACFIRE—tactical fire direction system
TACP—tactical air control party
TACS—tactical air control system
TALO—tactical airlift liaison officer
TAM—target-activated munitions
TAOR—tactical area of responsibility
TASC—Training and Audiovisual
Support Center
TASE—tactical air support element
TEC—training extension course
TEWT—tactical exercise without troops
TFW—tactical fighter wing
TLE—target locating error
TOC—tactical operations center
TOT—time on target

TOW—tube-launched, optically tracked,
wire-guided missile
TRW—tactical reconnaissance wing
TTR—target tracking radar
TV—television
VFMED—variable format message entry
device (TACFIRE)
V/GLLD—vehicular or ground laser
locator designator
VHF—very high frequency
VPK—vehicles per kilometer
VT—variable time
WLR—weapons-locating radar
ZF—zone of fire



National Stock Number	Description
1220-01-021-7278	(C) Scale, Graphical Munitions Effects (GMET-JMEM) f/M102 (U)
1220-01-021-7279	(C) Scale, Graphical Munitions Effects (GMET-JMEM) f/M109A1 (U)
1220-01-021-7276	(C) Scale, Graphical Munitions Effects (GMET-JMEM) f/M110 (U)
1220-01-021-7277	Scale, Graphical Munitions Effects, Training (GMET-JMEM)

These tables are an expendable item authorized by CTA 50-970.

L-8. Graphical Munitions Effects Tables (GMET)

The FM 6-141 series of manuals provides doctrine for target analysis procedures and the employment of weapon systems, and the JMEM's provide excellent effectiveness data; however, the usefulness of these publications to the fire direction officer or FSCoord during field operations has been limited by their volume, by the lack of easy accessibility, and by the difficulty of making comparisons of ammunition or weapon systems. The GMET's overcome these limitations by providing quick access to average comparative values for selected situations that the user may use as a guideline when making the engagement decision. The unclassified GMET, Training Edition for Medium Artillery (fig L-1), will generally require somewhat greater expenditures than the M109A1 GMET, in a given situation.

a. Table Description.

The table consists of a body and plastic runner or cursor. The open or clear portion of the cursor is the window. The marginal notes provide certain assumptions for the GMET calculations. The user can determine the number of battery or battalion volleys required to achieve a specified average expected fraction of casualties against enemy personnel in the open in either an offensive or defensive posture, or can determine the effects achieved with one battery or battalion volley.

(1) *Organization.* Each of the five blocks on each side of the table—Observer Adjusted, MET + VE 0 TLE, MET + VE 75 TLE, MET + 150 TLE, and MET + VE 250 TLE—is identical in format. Provision is made for target location error (TLE) of up to 250 meters and for three levels of effectiveness, in addition to one volley effects.

(2) *Target size.* Data is provided for personnel targets ranging in size from 50 meters radius and successively increasing in radius by 50 meters until 250 meters is reached. The cursor is labeled with these radii

(RT) for both battery and battalion volleys. The assumed radii for various size elements; e.g., Squad 50-100 meters, are listed on the cursor. The user should consider the following additional information when using the GMET.

□ If the dimensions of a target are less than the width of an open sheaf or a depth of 250 meters, consideration should be given to firing a converged sheaf to increase the expected fraction of casualties or decreasing the required number of volleys.

□ If the dimensions of a target exceed the width of an open sheaf or a depth of 250 meters, consideration should be given to creating multiple targets, firing zones, or to shifting fire.

□ If the target is long and narrow, such as a convoy on a road, then a series of 50 meters targets preceded by a multiplier to cover the length of the convoy can be used to determine the number of volleys to attack the target, provided special corrections are applied to the weapons.

(3) *Target Postures.* See note number 6 on the right edge of the table body for an explanation of the postures used in the computation of weapons effects.

(4) *Percentage of Casualties (% CAS).* The percentage of casualties is expressed as the average expected fraction of casualties. For example, if on one occasion 50 percent casualties were sustained, on another occasion 25 percent, and on a third occasion 25 percent, then the average expected fraction of casualties would be 33 percent. There is no probability or assurance associated with the percent of casualties. Against personnel targets in an offensive posture, the assumed desired average expected fraction of casualties is 30, 20, and 10 percent. For targets in a defensive posture, the assumed casualties is 10, 05, and 02 percent. The casualty percentages for the defense are lower than for the offense because of the greater shielding of targets in a defensive posture. Shown also is the average expected fraction of casualties for one battery

FOLDOUT

NOTES

1. LAZY W FORMATION
2. VOLLEYS PER FIRING UNIT AT 2/3 MAXIMUM RANGE.
3. CENTER OF BATTERY AIMED AT TARGET CENTER.
4. P = PROHIBITIVE OVER 30 BATTERY VOLLEYS.
- E = EXCESSIVE FOR SPECIFIED FRACTION OF CASUALTIES.

TRAINING EDITION FOR MEDIUM FIELD ARTILLERY											
OBSERVER ADJUSTED						MET + VE 0 TLE					
.30			.20			.10			1 VOL		
PD	VT	ICM	PD	VT	ICM	PD	VT	ICM	PD	VT	ICM
17	8	3	12	5	2	7					
22	10	4	17	7	3	9					
28	13	5	27	10	3	12					
P	24	7	P	16	4	20					
P	P	9	P	26	6	P					
5	3	E	3	2	E	E					
7	4	E	4	2	E	2					
10	5	2	6	3	E	3					
P	8	3	10	4	E	6					
P	P	5	P	6	3	10					

1220-01-021-7277

GMET Cursor →

% CAS

FZ/SHELL

RT

50

100

150

200

250

BN

VOL

50

100

150

200

250

MET + VE 0 TLE											
.30			.20			.10			1 VOL		
PD	VT	ICM	PD	VT	ICM	PD	VT	ICM	PD	VT	ICM
P	17	4	P	11	3	21	6	E	.01	.03	.12
P	20	5	P	12	3	28	7	E	.01	.02	.11
P	26	6	P	15	4	P	10	1	.01	.02	.10
P	P	7	P	23	4	P	14	2	—	.01	.08
P	P	9	P	P	6	P	19	3	—	.01	.05
P	6	1	7	4	E	3	2	E	.06	.09	.30
P	7	2	8	4	E	3	2	E	.05	.08	.27
P	9	3	9	5	E	4	3	E	.04	.07	.23
P	P	4	P	6	2	5	4	E	.03	.06	.18
P	P	5	P	10	3	8	6	E	.02	.05	.13

ASSUMED RT

SQD 50-100 M

HQ 100-150 M

PLT 150-200 M

CO 250 M

BN 250-500 M

CLASSIFIED

MUNITIONS EFFECTS TABLE

PERSONNEL IN OFFENSIVE POSTURE											
MET + VE 75 TLE						MET + VE 150 TLE					
.10			1 VOL			.30			.20		
ICM	PD	VT	ICM	PD	VT	ICM	PD	VT	ICM	PD	VT
3	15	6	E	.01	.02	.10	P	P	8	P	25
3	22	7	2	.01	.02	.09	P	P	10	P	30
4	30	8	2	.01	.01	.08	P	P	12	P	P
5	P	10	3	—	.01	.06	P	P	14	P	P
6	P	15	3	—	—	.05	P	P	16	P	P
E	4	2	E	.05	.07	.25	P	P	3	P	8
E	4	2	E	.04	.06	.23	P	P	4	P	10
1	6	3	E	.03	.05	.20	P	P	4	P	P
2	9	3	E	.03	.04	.16	P	P	5	P	P
3	P	4	E	.02	.03	.12	P	P	6	P	P
E	4	2	E	.05	.07	.25	P	P	3	P	8
E	4	2	E	.04	.06	.23	P	P	4	P	10
1	6	3	E	.03	.05	.20	P	P	4	P	P
2	9	3	E	.03	.04	.16	P	P	5	P	P
3	P	4	E	.02	.03	.12	P	P	6	P	P

CLASSIFIED

NOTES (con't)

5. % CASUALTIES AVERAGE EXPECTED FRACTION OF CAS.
6. TGT POSTURE:
 - a. OFFENSE FIRST VOLLEY 1/2 STANDING 1/2 PRONE — SUBSEQ VOL'S ALL PRONE
 - b. DEFENSE FIRST VOLLEY 1/2 PRONE 1/2 FOXHOLES SUBSEQ VOLLEYS ALL FOXHOLES
7. ICM IS AP

GMET body, both sides shown.

UNCLASSIFIED

GRAPHICAL MUNITIONS EFFECTS TABLE

TRAINING EDITION FOR MEDIUM FIELD ARTILLERY																								PERSONNEL IN DEFENSIVE POSTURE																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																				
OBSERVER ADJUSTED												MET + VE 0 TLE												MET + VE 75 TLE												MET + VE 150 TLE												MET + VE 250 TLE																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																												
.10			.05			.02			1 VOL			.10			.05			.02			1 VOL			.10			.05			.02			1 VOL			.10			.05			.02			1 VOL																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
PD	VT	ICM	PD	VT	ICM	PD	VT	ICM	PD	VT	ICM	PD	VT	ICM	PD	VT	ICM	PD	VT	ICM	PD	VT	ICM	PD	VT	ICM	PD	VT	ICM	PD	VT	ICM	PD	VT	ICM	PD	VT	ICM	PD	VT	ICM	PD	VT	ICM	PD	VT	ICM	PD	VT	ICM	PD	VT	ICM	PD	VT	ICM	PD	VT	ICM	PD	VT	ICM	PD	VT	ICM	PD	VT	ICM	PD	VT	ICM	PD	VT	ICM	PD	VT	ICM	PD	VT	ICM	PD	VT	ICM	PD	VT	ICM	PD	VT	ICM	PD	VT	ICM	PD	VT	ICM	PD	VT	ICM	PD	VT	ICM	PD	VT	ICM	PD	VT	ICM	PD	VT	ICM	PD	VT	ICM	PD	VT	ICM	PD	VT	ICM	PD	VT	ICM	PD	VT	ICM	PD	VT	ICM	PD	VT	ICM	PD	VT	ICM	PD	VT	ICM	PD	VT	ICM	PD	VT	ICM	PD	VT	ICM	PD	VT	ICM	PD	VT	ICM	PD	VT	ICM	PD	VT	ICM	PD	VT	ICM	PD	VT	ICM	PD	VT	ICM	PD	VT	ICM	PD	VT	ICM	PD	VT	ICM	PD	VT	ICM	PD	VT	ICM	PD	VT	ICM	PD	VT	ICM	PD	VT	ICM	PD	VT	ICM	PD	VT	ICM	PD	VT	ICM	PD	VT	ICM	PD	VT	ICM	PD	VT	ICM	PD	VT	ICM	PD	VT	ICM	PD	VT	ICM	PD	VT	ICM	PD	VT	ICM	PD	VT	ICM	PD	VT	ICM	PD	VT	ICM	PD	VT	ICM	PD	VT	ICM	PD	VT	ICM	PD	VT	ICM	PD	VT	ICM	PD	VT	ICM	PD	VT	ICM	PD	VT	ICM	PD	VT	ICM	PD	VT	ICM	PD	VT	ICM	PD	VT	ICM	PD	VT	ICM	PD	VT	ICM	PD	VT	ICM	PD	VT	ICM	PD	VT	ICM	PD	VT	ICM	PD	VT	ICM	PD	VT	ICM	PD	VT	ICM	PD	VT	ICM	PD	VT	ICM	PD	VT	ICM	PD	VT	ICM	PD	VT	ICM	PD	VT	ICM	PD	VT	ICM	PD	VT	ICM	PD	VT	ICM	PD	VT	ICM	PD	VT	ICM	PD	VT	ICM	PD	VT	ICM	PD	VT	ICM	PD	VT	ICM	PD	VT	ICM	PD	VT	ICM	PD	VT	ICM	PD	VT	ICM	PD	VT	ICM	PD	VT	ICM	PD	VT	ICM	PD	VT	ICM	PD	VT	ICM	PD	VT	ICM	PD	VT	ICM	PD	VT	ICM	PD	VT	ICM	PD	VT	ICM	PD	VT	ICM	PD	VT	ICM	PD	VT	ICM	PD	VT	ICM	PD	VT	ICM	PD	VT	ICM	PD	VT	ICM	PD	VT	ICM	PD	VT	ICM	PD	VT	ICM	PD	VT	ICM	PD	VT	ICM	PD	VT	ICM	PD	VT	ICM	PD	VT	ICM	PD	VT	ICM	PD	VT	ICM	PD	VT	ICM	PD	VT	ICM	PD	VT	ICM	PD	VT	ICM	PD	VT	ICM	PD	VT	ICM	PD	VT	ICM	PD	VT	ICM	PD	VT	ICM	PD	VT	ICM	PD	VT	ICM	PD	VT	ICM	PD	VT	ICM	PD	VT	ICM	PD	VT	ICM	PD	VT	ICM	PD	VT	ICM	PD	VT	ICM	PD	VT	ICM	PD	VT	ICM	PD	VT	ICM	PD	VT	ICM	PD	VT	ICM	PD	VT	ICM	PD	VT	ICM	PD	VT	ICM	PD	VT	ICM	PD	VT	ICM	PD	VT	ICM	PD	VT	ICM	PD	VT	ICM	PD	VT	ICM	PD	VT	ICM	PD	VT	ICM	PD	VT	ICM	PD	VT	ICM	PD	VT	ICM	PD	VT	ICM	PD	VT	ICM	PD	VT	ICM	PD	VT	ICM	PD	VT	ICM	PD	VT	ICM	PD	VT	ICM	PD	VT	ICM	PD	VT	ICM	PD	VT	ICM	PD	VT	ICM	PD	VT	ICM	PD	VT	ICM	PD	VT	ICM	PD	VT	ICM	PD	VT	ICM	PD	VT	ICM	PD	VT	ICM	PD	VT	ICM	PD	VT	ICM	PD	VT	ICM	PD	VT	ICM	PD	VT	ICM	PD	VT	ICM	PD	VT	ICM	PD	VT	ICM	PD	VT	ICM	PD	VT	ICM	PD	VT	ICM	PD	VT	ICM	PD	VT	ICM	PD	VT	ICM	PD	VT	ICM	PD	VT	ICM	PD	VT	ICM	PD	VT	ICM	PD	VT	ICM	PD	VT	ICM	PD	VT	ICM	PD	VT	ICM	PD	VT	ICM	PD	VT	ICM	PD	VT	ICM	PD	VT	ICM	PD	VT	ICM	PD	VT	ICM	PD	VT	ICM	PD	VT	ICM	PD	VT	ICM	PD	VT	ICM	PD	VT	ICM	PD	VT	ICM	PD	VT	ICM	PD	VT	ICM	PD	VT	ICM	PD	VT	ICM	PD	VT	ICM	PD	VT	ICM	PD	VT	ICM	PD	VT	ICM	PD	VT	ICM	PD	VT	ICM	PD	VT	ICM	PD	VT	ICM	PD	VT	ICM	PD	VT	ICM	PD	VT	ICM	PD	VT	ICM	PD	VT	ICM	PD	VT	ICM	PD	VT	ICM	PD	VT	ICM	PD	VT	ICM	PD	VT	ICM	PD	VT	ICM	PD	VT	ICM	PD	VT	ICM	PD	VT	ICM	PD	VT	ICM	PD	VT	ICM	PD	VT	ICM	PD	VT	ICM	PD	VT	ICM	PD	VT	ICM	PD	VT	ICM	PD	VT	ICM	PD	VT	ICM	PD	VT	ICM	PD	VT	ICM	PD	VT	ICM	PD	VT	ICM	PD	VT	ICM	PD	VT	ICM	PD	VT	ICM	PD	VT	ICM	PD	VT	ICM	PD	VT	ICM	PD	VT	ICM	PD	VT	ICM	PD	VT	ICM	PD	VT	ICM	PD	VT	ICM	PD	VT	ICM	PD	VT	ICM	PD	VT	ICM	PD	VT	ICM	PD	VT	ICM	PD	VT	ICM	PD	VT	ICM	PD	VT	ICM	PD	VT	ICM	PD	VT	ICM	PD	VT	ICM	PD	VT	ICM	PD	VT	ICM	PD	VT	ICM	PD	VT	ICM	PD	VT	ICM	PD	VT	ICM	PD	VT	ICM	PD	VT	ICM	PD	VT	ICM	PD	VT	ICM	PD	VT	ICM	PD	VT	ICM	PD	VT	ICM	PD	VT	ICM	PD	VT	ICM	PD	VT	ICM	PD	VT	ICM	PD	VT	ICM	PD	VT	ICM	PD	VT	ICM	PD	VT	ICM	PD	VT	ICM	PD	VT	ICM	PD	VT	ICM	PD	VT	ICM	PD	VT	ICM	PD	VT	ICM	PD	VT	ICM	PD	VT	ICM	PD	VT	ICM	PD	VT	ICM	PD	VT	ICM	PD	VT	ICM	PD	VT	ICM	PD	VT	ICM	PD	VT	ICM	PD	VT	ICM	PD	VT	ICM	PD	VT	ICM	PD	VT	ICM	PD	VT	ICM	PD	VT	ICM	PD	VT	ICM	PD	VT	ICM	PD	VT	ICM	PD</

FOLDOUT

and one battalion volley. The number of expected casualties is the product of the average expected fraction of casualties and the number of personnel in the target area.

NOTE TO READER: PAGE L-11, FOLDOUT, MAY BE REMOVED FROM THE MANUAL FOR EASY REFERENCE AND STUDY THROUGHOUT PARAGRAPH L-8.

(5) *Fuze/Shell Combinations (FZ/SHELL)*. The GMET contains effectiveness data for the standard high explosive shell (e.g., M107 for 155-mm howitzer) with point detonating (PD) or proximity fuze (VT) and the antipersonnel improved conventional munitions.

(6) *Volleys Required*. The GMET lists the number of battery or battalion volleys required to achieve a specified casualty percentage against personnel for each size target, method of delivery, shell-fuze combination, and target location error. The letter P indicates that the number of volleys required is over 30 battery or 10 battalion volleys and is considered *prohibitive* because any additional volleys will not achieve a significant increase in casualties. The letter E indicates that the casualties obtained

would be in *excess* of the specified casualty level.

(7) *Met + VE Delivery Technique*. Effectiveness tables are based upon the average weather change which could take place using a 2-hour old metromessage. Thus, when using met data which is older than 2 hours, more volleys will be required to achieve the desired fraction of casualties. Conversely, if more accurate data is being used, less volleys will be required.

(8) *Observer Adjusted Delivery Techniques*. The tables are based on the assumption that the observer has conducted sufficient adjustment to place the center of the sheaf(s) on the adjusting point (target).

b. Other Considerations.

(1) *Volley Versus TOT Fires*. The GMET assumes that battery or battalion volley fire will be used. The user must be aware that the greatest effects are achieved when surprise fires with maximum intensity are used. The use of the time on target (TOT) technique will normally reduce the GMET expenditure for a given situation because of the reduced time the enemy has to seek or increase his protection.

(2) *Materiel Targets (Area Fire)*. None of the weapons are considered effective against armored targets in area fire. The probability of obtaining a hit is remote. Undoubtedly, there will be bonus effects at times, but they should be considered as bonus effects and not relied upon. This is not to say that exposed personnel on or adjacent to materiel targets cannot be successfully attacked with artillery.

(3) *Round-Off Rule*. In some instances the required expenditure for a required casualty level may appear excessive based on the one volley effects. (See Training Edition, Defensive Side, MET + VE 250 TLE, 50 MRT.) The effects are calculated to four decimal places and rounded to two decimal places; thus the one volley effects of .02 may range from 0151 to 0250 and either one or two volleys may be required to achieve exactly .02 level of effects.

c. Sample Problem.

(1) *Given:*

Unit—155-mm howitzer battalion.

Target—Platoon of infantry in the attack
(assume offensive posture, radius of target
150 meters, target location error 0 meters).Ammunition—Sufficient conventional
ammunition with VT fuze is available.Effects desired—Minimum average
expected fraction of casualties of 30 percent.

Delivery technique—MET + VE.

(2) *Procedure:* Slide the cursor to MET +
VE delivery technique 0 TLE on the offensive
posture side of GMET. Under the window for
30 percent casualties it can be determinedthat 9 battalion volleys of VT fuzed
ammunition would be required to achieve 30
percent average expected fraction of
casualties. (See figure L-2.)(3) *Solution:* The FDO orders the
battalion to fire 9 volleys VT fuzed
ammunition to achieve 30 percent average
expected fraction of casualties.

d. Summary.

The Graphical Munitions Effects Table
(GMET) is to tactical fire direction what the
Graphical Firing Table and Graphical Site
Tables are to technical fire direction. While
the latter assist in placing the rounds on the

MET + VE 0 TLE												
.30			.20			.10			1 VOL			
PD	VT	ICM	PD	VT	ICM	PD	VT	ICM	PD	VT	ICM	
RT												
50	P	17	4	P	11	3	21	6	E	.01	.03	.12
100	P	20	5	P	12	3	28	7	E	.01	.02	.11
150	P	26	6	P	15	4	P	10	1	.01	.02	.10
200	P	P	7	P	23	4	P	14	2	—	.01	.08
250	P	P	9	P	P	6	P	19	3	—	.01	.05
BN												
50	P	6	1	7	4	E	3	2	E	.06	.09	.30
100	P	7	2	8	4	E	3	2	E	.05	.08	.27
150	P	P	4	9	5	E	4	3	E	.04	.07	.23
200	P	P	4	P	6	2	5	4	E	.03	.06	.18
250	P	P	5	P	10	3	8	6	E	.02	.05	.13

ASSUMED RT
 SQD 50–100 M
 HQ 100–150 M
 PLT 150–200 M
 CO 250 M
 BN 250–500 M

Figure L-2. Cutaway of GMET.

target, the former assists in determining the best delivery means and the optimum

number of rounds to be delivered on the target to achieve the desires of the commander.

L-9. Employment Guide

Table L-2 provides a guide for cannon attack of typical targets.

Table L-2. Guide for Cannon Attack of Typical Targets

Type Target	Observation	Weapons	Projectile	HE Fuze	Results Desired
<i>Personnel</i>					
In Open or In Foxhole w/o Over-head Cover	Observed/ unobserved	All	HE	Prox (VT), time	Destruction ¹ Neutralization ²
				Quick, prox time	Suppression ³
		All except 175-mm	(AP) ICM		Destruction ⁴ Neutralization ⁵

Remarks: ¹Massing is required. * TOT missions are most effective. 1st volley most effective.

²Massing is required except for small targets.

³Response time is critical against active targets. Preferred fuze is proximity.

⁴Massing is required on large targets. TOT missions are most effective.

⁵Cannon battery volleys are frequently sufficient.

*Targets, regardless of type, with an estimated target radius of greater than 150 meters, usually require massing for effective attack.

In Foxhole with Over-head Cover	Observed	All	HE	Quick/Delay (ricochet)	Neutralization ⁶
				Prox, time delay, quick	Suppression ⁷
		All except 175-mm	(AP) ICM		Neutralization ⁸ Suppression ⁹

Remarks: ⁶Massing is required. TOT missions are most effective. Consider use of WP to drive personnel out of foxholes.

⁷Response time is critical against active targets. Proximity fuze is preferred. Consider use of smoke for obscuration.

⁸Massing is required. TOT missions are most effective.

⁹Consider use of ICM on intermittent basis for increased effectiveness.

Table L-2. Guide for Cannon Attack of Typical Targets—*Continued*

Type Target	Observation	Weapons	Projectile	HE Fuze	Results Desired
In Dugouts or Caves	Observed	All (pref 155-mm or larger)	HE	Delay, quick	Destruction ¹⁰
Remarks:	¹⁰ Direct fire, assault techniques. Fire HE Quick at intervals to clear away camouflage, earth cover, and rubble.				
Attacking btry pos	Observed	105-mm	Beehive		
		All	HE (AP) ICM	Time	Destruction ¹¹
Remarks:	¹¹ Set fuze to detonate on up-leg of trajectory for close-in defense of battery area.				
Vehicle**					
Tanks	Observed	All		Prox, time	Suppression ¹²
	Observed/ unobserved	155-mm	(AP, AM) ICM		Suppression ¹³
		8-inch	(AP, AM) ICM		Suppression ¹⁴
	Observed/ unobserved	155-mm	FASCAM ¹⁵		
	Observed	155-mm	CLGP		Destruction
	Direct fire	105-mm	HEP, HEP-T HEAT		Destruction

Remarks: ¹²Projectile HE to force tanks to "button up" and personnel outside to take cover or disperse. WP may blind vehicle drivers and fires may be started from incendiary effect on outside fuel tanks, but it may also obscure adjustment. (Note: (AP, AM) ICM is preferred munition for unobserved fire)

¹³See paragraph 7-7, FM 6-141-2. Massing is effective. ICM is preferred.

¹⁴See paragraph 7-7, FM 6-141-2. Massing is effective. ICM is preferred.

¹⁵Both antitank and antipersonnel projectiles should be used.

******The first objective in firing on moving vehicles is to stop the movement. For this purpose a deep bracket is established so that the target will not move out of the initial bracket during adjustment. Speed of adjustment is essential. If possible, the column should be stopped at a point where vehicles cannot change their route and where one stalled vehicle will cause others to stop. Vehicles moving on a road can be attacked by adjusting on a point on the road and then timing the rounds fired so that they arrive at that point when a vehicle is passing it. A firing unit or several units, if available, may fire at different points on the road simultaneously.

Table L-2. Guide for Cannon Attack of Typical Targets—*Continued*

Type Target	Observation	Weapons	Projectile	HE Fuze	Results Desired
Armored personnel carriers	Observed	All	HE	Prox, time	Suppression ¹⁶
	Observed/ unobserved	155-mm	(AP) ICM (AP, AM) ICM		Neutralization ¹⁷
		8-inch	(AP) ICM (AP, AM) ICM		
	Observed/ unobserved	155-mm	FASCAM ¹⁸		
	Observed	155-mm	CLGP		Destruction

Remarks: ¹⁶Force vehicles to "button up" and personnel outside to take cover or disperse.

¹⁷See paragraph 7-7, FM 6-141-2. Massing is effective.

¹⁸See remark for tanks.

Vehicle Trucks	Observed/ unobserved	All	HE	Prox, time	Destruction ¹⁹
		155-mm	(AP, AM) ICM		Destruction
		8-inch	(AP, AM) ICM		Destruction

Remarks: ¹⁹ICM is preferred munition.

Weapons Antitank Missile	Observed	All	HE	Quick	Suppression ²⁰
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Remarks: ²⁰Response time is critical. Intermittent fire may be required. Change to Fuze Proximity of (AP, AM) ICM for materiel damage if ATGM platform on BRDM is raised.

Table L-2. Guide for Cannon Attack of Typical Targets—*Continued*

Type Target	Observation	Weapons	Projectile	HE Fuze	Results Desired
Air Defense ZSU-23-4 SA 6	Observed/ unobserved	All	HE	Prox	Firepower ²¹ Kill
		155-mm	(AP, AM) ICM		Firepower ²² Kill
		8-inch	(AP, AM) ICM		Firepower Kill
SA 8, 9	Observed	All	HE	Quick	Suppression ²³ Firepower ²⁴ Kill

Remarks: ²¹Smoke may also be used to obscure gunner's line of sight to friendly aircraft.
²²Above remarks apply. ICM is preferred munition. Consider converged sheath if weapon is point target and accurately located.
²³Response time is critical. Intermittent fire may be required.
²⁴Same as above.

Towed FA Mortars Multiple Rocket Launcher	Unobserved	All	HE, WP	Prox, time ²⁵	
		All less 175-mm	(AP) ICM ²⁶		
		155-mm	FASCAM ²⁷		

Remarks: ²⁵WP is used to ignite materiel. See personnel targets for results desired.
²⁶See personnel targets section for results desired. TOT missions are most effective. Massing is usually required.
²⁷Use AP Scatterable Mine Projectile in conjunction with HE or ICM for sustained effects.

<i>Weapons</i> SP Artillery	Unobserved	All	HE, WP	Prox, time	Suppression ²⁸
		All less 105- and 175-mm	(AP, AM) ICM		Suppression ²⁹
		155-mm	FASCAM ³⁰		

Remarks: ²⁸WP is used to ignite materiel.
²⁹ICM is preferred munition.
³⁰Use AP Scatterable Mine Projectile in conjunction with HE or ICM for sustained effects.

Table L-2. Guide for Cannon Attack of Typical Targets—Continued

Type Target	Observation	Weapons	Projectile	HE Fuze	Results Desired
SS Missile	Unobserved	All less 105-mm	HE	Prox, time	Firepower ³¹ Kill
		155-mm	(AP, AM) ICM		Firepower ³¹ Kill
		8-inch	(AP, AM) ICM		
Remarks:	³¹ Use converged sheaf if time and target location accuracy permit. TLE in excess of 200 meters require massing of fires. ICM is preferred munition.				
Radar	Unobserved	All	HE	Quick, time, prox	Firepower ³² Kill
		155-mm	(AP, AM) ICM		Firepower ³² Kill
		8-inch	(AP, AM) ICM		
Remarks:	³² Use converged sheaf if time and target location accuracy permit. TLE in excess of 200 meters require massing of fires. ICM is preferred munition.				
Artillery Command and Obs Post	Observed	All	HE	Quick	Suppression ³³
		155-mm	(AP, AM) ICM		Suppression
		8-inch	(AP, AM) ICM		
Remarks:	³³ Intermittent fire may be required. HE is preferred munition when response time is critical.				
Command Post	Unobserved	All	HE	Prox, time	Neutralization ³⁴ or Destruction
		155-mm	(AP) (AP, AM) ICM		
		8-inch	(AP) (AP, AM) ICM		
Remarks:	³⁴ Use scatterable mines for sustained effects. When target contains personnel and light materiel targets, (AP,AM) ICM is preferred munition.				
Supply Installation	Unobserved	All	HE, WP	Quick	Fires ³⁵
Remarks:	³⁵ Large target location errors require massing to insure target coverage				

Table L-2. Guide for Cannon Attack of Typical Targets—*Continued*

Type Target	Observation	Weapons	Projectile	HE Fuze	Results Desired
Boats	Observed ³⁶				
Remarks: ³⁶ Attack as moving personnel target.					
Bridges	Observed/ unobserved	All (pref 155-mm or larger)	HE	Quick, CP, delay	Destruction ³⁷
		155-mm	CLGP		Destruction
Remarks: ³⁷ Direction of fire preferably with long axis of bridge. Destruction of permanent bridges is best accomplished by knocking out bridge support. Fuze quick for wooden or pontoon bridges.					
Fortifications	Observed	All (pref 155-mm or larger)	HE	CP, delay, quick	Destruction ³⁸
		155-mm	CLGP		Destruction
Remarks: ³⁸ Use highest practical charge in assault and direct fire.					
Roads and Railroads	Observed	All (pref 155-mm or larger)	HE	Delay, CP	Destruction ³⁹
Remarks: ³⁹ Attack critical points. defiles, fills, crossings, culverts, bridges, and narrow portions. Direction of fire should coincide with direction of road.					

L-10. Summary

a. Target analysis is the vehicle through which these critical questions are answered:

- ☐ *Should* this target be attacked?
- ☐ *When* should it be attacked?
- ☐ *How* should the target be attacked?
- ☐ *What* fire support *means* will do the best job?
- ☐ *How much* and *what type* ammunition should be used?

b. Target analysis, in answering these questions, is an aid to the fire planning and coordination process. The factors and techniques to analyze targets is essential knowledge for every FSCOORD, FSO, and FDO.

Appendix M

Relevant Standardization Agreements (STANAG)

AGREEMENTS

PAGE

**Extract of STANAG 2099, Fire Coordination in Support
of Land Forces**

M-3

**Extract of STANAG 2104, Friendly Nuclear Strike
Warning to Armed Forces Operating on Land.**

M-5

Appendix M

Extract of STANAG 2099, Fire Coordination in Support of Land Forces

STANAG 2099 (Edition No. 3) NAVY/ARMY/AIR

NATO STANDARDIZATION AGREEMENT (STANAG)

FIRE COORDINATION IN SUPPORT OF LAND FORCES

Annex: **A.** Fire Support Co-ordination Line (FSCL) Message

AIM

1. The aim of this agreement is to standardize, for the use of the NATO Forces, procedures for fire co-ordination in support of land forces.

AGREEMENT

2. Participating nations agree that the NATO Forces will follow the principles laid down herein to prescribe procedures for fire co-ordination in support of land forces.

GENERAL

3. These principles apply to the use of conventional and nuclear weapons in the tactical role. They do not apply to weapons with an air defence mission which are subject to special control and safety procedures.

DEFINITIONS

4. The definition for the FSCL is contained in AAP-6 – the NATO Glossary of Military Terms and Definitions and is repeated below for convenience:

Fire Support Co-ordination Line (FSCL). A line established by the appropriate ground commander to ensure co-ordination of fire not under his control but which may affect current tactical operations. The fire support co-ordination line is used to co-ordinate fires of air, ground or sea weapons systems using any type of ammunition against surface targets. The fire support

co-ordination line should follow well defined terrain features. The establishment of the fire support co-ordination line must be co-ordinated with the appropriate tactical air commander and other supporting elements. Supporting elements may attack targets forward of the fire support co-ordination line, without prior co-ordination with the ground force commander, provided the attack will not produce adverse surface effects on, or to the rear of, the line. Attacks against surface targets behind this line must be co-ordinated with the appropriate ground force commander. Also known as "FSCL".

5. A related definition to the FSCL is the "No Fire Line" which is also contained in AAP-6 and is repeated below for convenience:

No Fire Line. A line short of which artillery or ships do not fire except on request or approval of the supported commander, but beyond which they may fire at any time without danger to friendly troops.

6. For purposes of this STANAG, the use of a NO FIRE LINE is optional.

(Note: The United States has entered a reservation to the term/definition of NO FIRE LINE in that the term/definition COORDINATED FIRE LINE (CFL) will be used in lieu of.)

STATEMENT OF DETAILS

7. Characteristics:

a. Normally the corps commander establishes the FSCL. The FSCL is used to co-ordinate the fires of air, ground or sea weapon systems using any type of ammunition. Supporting elements may attack targets forward of the FSCL provided that the weapons used do not produce effects on, or to the rear of the line; attacks behind this line must be co-ordinated with the appropriate ground force commander, except those fires which have been cleared by other measures, such as the No Fire Line (NFL), and require no further co-ordination.

b. The FSCL should be as close to the forward elements as possible, consistent with the tactical situation and its evolution. Furthermore, it should be easy to define on a map and easily recognized from the ground and air.

c. When detached forces are beyond this FSCL, another FSCL should be established around the detached forces.

CONDITIONS FOR SPECIAL CO-ORDINATION

8. a. Co-ordination must be effected with the land force commander concerned prior to the use of fire support whose effects (except dazzle and radiological fallout from an accidental surface burst) may reach or cross the FSCL towards friendly forces. When the weapon effects will cross the boundary separating two land force commands and the FSCL, co-ordination must be effected with, or between, both land force commands concerned.

b. A FSCL is not normally required for units lower than the corps. The current "No Fire Line" and boundaries will normally provide adequate control measures at their lower level.

c. Co-ordination of fire should be effected through normal fire support co-ordination channels, adhering to the principle that the supporting force need not co-ordinate with more than one headquarters. In the case of air strikes with effects on or to the rear of the FSCL, the air forces should co-ordinate with Corps Headquarters or the land force command concerned.

d. A request by a unit for air support or additional artillery/naval gunfire support on a target short of the FSCL but which has been co-ordinated with and passed by the land force command concerned obviates the necessity for further check by the delivery unit.

FIRE SUPPORT COORDINATION LINE (FSCL) MESSAGE

9. The Fire Support Coordination Line (FSCL) Message is used to inform air bases, aircraft carriers, artillery units/formations, naval gunfire support ships and interested units/formations of the current FSCL. The format and an example message is attached at Annex A.

ANNEX A TO STANAG 2099

FIRE SUPPORT COORDINATION LINE (FSCL) MESSAGE

1. *Purpose.* The standard form of message whereby air bases, aircraft carriers, artillery units/formations, naval gunfire support ships, and interested units/formations, are informed of the current FSCL (See Note a.).

2. *Format:*

USE STANDARD MESSAGE FORM HEADING

(See Notes)

FORMAT (not to be transmitted)	EXAMPLE MESSAGE
FSCL: Always start of message	FSCL
A. FSCL SERIAL NUMBER	A. 12
B. EFFECTIVE DATE AND TIME	B. 071200Z
C. DESCRIPTION OR CODE NAME (See Note d.)	C. WHITE LADY
ACKNOWLEDGE (See Note e).	ACK

Notes:

a. *Procedure.* The message is passed to airfields and aircraft carriers by means of Tactical Air Command Nets wherever possible, to artillery units/formations by Command Channels and to naval gunfire support ships by appropriate Naval Gunfire Control Nets. In emergency, the message is passed by Tactical Air Request Nets and appropriate Fire Direction Nets.

b. *Precedence.* Depending on the tactical urgency to the addressees in relation to other message traffic.

c. *Security.* Classified in accordance with local SOPs. Map coordinates of the FSCL must not be sent in the clear.

d. *Description or Code Name.* The FSCL may be given by map coordinates or by a previously arranged code name.

e. *Acknowledgement Instructions.* It is essential that the originator knows that all addressees have received and understood the message.

Appendix M

Extract of

Standardization

Agreement

(STANAG) No. 2104

Standardization Agreements (STANAG's) are international (NATO) agreements designed to facilitate interallied operations. Upon ratification by the United States, a STANAG is binding upon US Army Forces (entirely or with exceptions as noted). Following is STANAG 2104 in its entirety.

NATO—UNCLASSIFIED

DETAILS OF AGREEMENT (DofA)

FRIENDLY NUCLEAR STRIKE WARNING TO ARMED

FORCES OPERATING ON LAND

1. AGREEMENT

It is agreed that the NATO Forces will adopt the following system of friendly nuclear strike warnings for use at corps level and below. This applies to surface-to-surface and air-to-surface strikes in support of ground forces, and to emplaced atomic demolition munitions (ADM).

2. GENERAL

The requirement for a standard warning message and delineation of notification channels is essential to ensure that timely warning of friendly nuclear strikes is provided so that armed forces personnel may take individual measures to protect themselves.

3. WARNING RESPONSIBILITIES

a. Responsibility for initiating the warning rests with the executing commander. Responsibility for issuing the STRIKWARN message is to be detailed in national and NATO operational orders and SOP's.

b. Commanders authorized to release nuclear strikes will ensure that strikes affecting the safety of adjacent or other commands are coordinated with those commands in sufficient time to permit dissemination of warnings to armed forces personnel and the taking of protective measures. Conflicts must be submitted to the next higher commander for a decision.

4. DETERMINATION OF HEADQUARTERS, FORMATIONS/UNITS TO BE WARNED

a. The commanders responsible for disseminating STRIKWARN should inform:

(1) Subordinate headquarters whose units are likely to be affected by the strike.

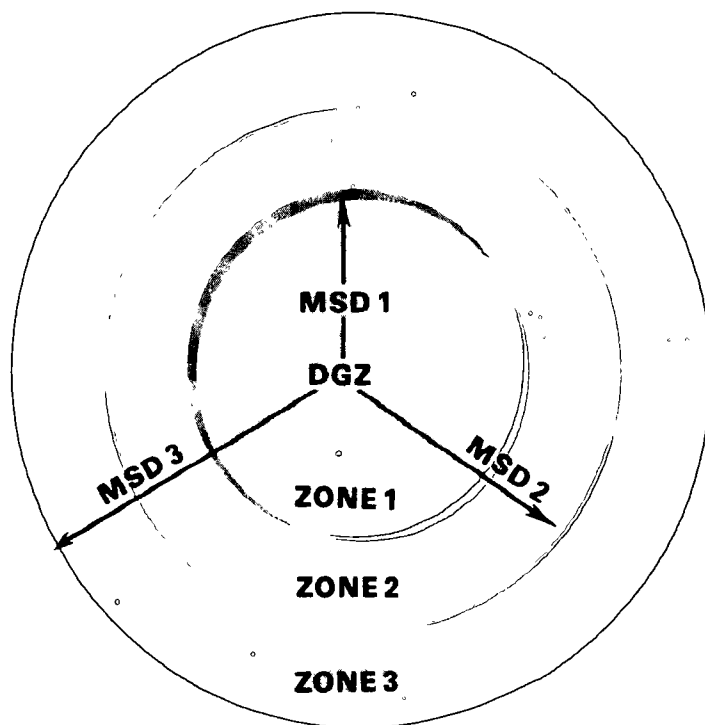
(2) Adjacent headquarters whose units are likely to be affected by the strike.

(3) Own next higher headquarters, when units not under the command of the releasing commander are likely to be affected by the strike.

b. Each headquarters receiving a warning of nuclear attack will warn subordinate elements of the safety measures they should take, in the light of their proximity to the Desired Ground Zero (DGZ).

c. Each unit concerned, down to the lowest level, will be warned by its next higher level of the safety measures it should take.

5. ZONES OF WARNING AND PROTECTION REQUIREMENTS FOR FRIENDLY NUCLEAR STRIKES



MSD 1 MSD 2 MSD 3 DGZ ZONE 1 ZONE 2 ZONE 3

Radius	Corresponding to	Zone	Requirements
DGZ			
		1	Evacuation of all armed forces personnel <i>(See Note 4)</i>
MSD 1	Limit of negligible risk* to warned and protected armed forces personnel <i>(See Note 5)</i>		
		2	Maximum protection <i>(See Note 6)</i>
MSD 2	Limit of negligible risk* to warned and exposed armed forces personnel		
		3	Minimum protection <i>(See Note 7)</i>
MSD 3	Limit of negligible risk* to unwarned and exposed armed forces personnel		
More than MSD 3			No protective measure except against dazzle

**(As defined in STANAG 2083)*

Notes:

1. MSD means Minimum Safe Distance.
2. The MSD is equal to a radius of safety (R_s) for the yield, plus a buffer distance (d_b) related to the dispersion normal to the weapon system used and the orientation of friendly forces in relation to the line of fire. When surface bursts are used, or an intended air burst has less than a 99 percent assurance of no military significant fallout, the fallout hazard will be considered. The details of tactically significant fallout areas are to be included in the STRIKWARN under line YANKEE, and ZULU or ZULU INDIA.
3. Commanders will be guided to safety criteria as stated in FM 101-31-1, Staff Officers Field Manual, Nuclear Weapons Employment (or appropriate national manuals with the same criteria).
4. If evacuation is not possible or if a commander elects a higher degree of risk, maximum protective measures will be required.
5. Negligible risk should not normally be exceeded unless significant advantages will be gained.
6. Maximum protection denotes that armed forces personnel are in "closed up" tanks or sheltered in foxholes with overhead shielding.
7. Minimum protection denotes that armed forces personnel are prone on open ground with all skin areas covered and with an overall thermal protection at least equal to that provided by a two-layer uniform.

6. WARNING MESSAGES

Warning messages will include the following information (see STANAG 2103):

STRIKWARN

- ALFA:** Code word indicating nuclear strike (target number).
- DELTA:** Date/time group of burst and date/time group after which the strike will be cancelled (both in ZULU time).
- FOXTROT:** GZ or DGZ (UTM grid co-ordinates with a minimum of 6 numerical figures).
- HOTEL:** Indicate air, surface or sub-surface bursts.
- INDIA:** For all bursts:
 MSD 1 in hundreds of metres, four (4) digits
 MSD 2 in hundreds of metres, four (4) digits
 MSD 3 in hundreds of metres, four (4) digits
 LSD for light aircraft in flight in hundreds of metres, four (4) digits.
- YANKEE:** For all bursts when there is less than a 99% assurance of no militarily significant fallout.
 Azimuth of left then right radial lines (degrees or mils—state which) four (4) digits each.
- ZULU:** For bursts 0.15KT or greater (except sub-surface bursts) when there is less than 99% assurance of no military significant fallout. Effective wind speed in kilometres per hour to nearest kilometre, three (3) digits. Downwind distance of Zone I to nearest kilometre, three (3) digits. Cloud radius to nearest kilometre, two (2) digits. (Use of the ZULU line precludes use of the ZULU INDIA line.)

Note. If effective wind speed is less than 8 km/hour line ZULU will contain only three significant digits, i.e. "the radius of Zone I".

For bursts less than 0.15KT and for all sub-surface bursts. Effective wind speed in kilometres per hour to nearest kilometre, three (3) digits. Downwind distance of Zone I in hundreds of metres, four (4) digits. Downwind distance of Zone II in hundreds of metres, four (4) digits. Cloud radius in hundreds of metres, three (3) digits...(use of the ZULU INDIA line precludes use of the ZULU line).

Note: If Effective Wind Speed is less than 8 km/hour line ZULU INDIA will contain only four significant digits, i.e. the radius of Zone I.

7. EXAMPLE MESSAGES

a. FOR AIR BURSTS WITH 99% ASSURANCE OF NO MILITARILY SIGNIFICANT FALLOUT

STRIKWARN

ALFA	AC 425
DELTA	280515/280525
FOXTROT	NB 597178
HOTEL	AIR
INDIA	0022 0024 0038 0037

b. FOR BURSTS 0.15 KT OR GREATER (EXCEPT SUB-SURFACE BURSTS) WHEN THERE IS LESS THAN 99% ASSURANCE OF NO MILITARILY SIGNIFICANT FALLOUT

STRIKWARN

ALFA	AC 428
DELTA	280520/280530
FOXTROT	NB 590167
HOTEL	SURFACE
INDIA	0020 0022 0033 0033
YANKEE	0072 0112 DEGREES
ZULU	016 006 01

c. FOR BURSTS LESS THAN 0.15 KT AND FOR ALL SUB-SURFACE BURSTS

STRIKWARN

ALFA	AA 023
DELTA	280900/280910
FOXTROT	NB 533126
HOTEL	SUB-SURFACE
INDIA	0004 0004 0004 0006
YANKEE	0065 0105 DEGREES
ZULU INDIA	030 0003 0005 005

8. IMPENDING STRIKE WARNING

Warning of impending strikes will be initiated no earlier than is necessary to complete warning of armed forces personnel. Any available means of communication – land lines if possible – will be utilized to ensure that all armed forces personnel requiring warning are notified.

9. ACTION ON CANCELLED STRIKES

When nuclear strikes are cancelled, units previously warned will be notified in the clear by the most expeditious means in the following format:

- a. Code Word (Target Number)
- b. CANCELLED

10. USE OF CODES

Items DELTA and FOXTROT above will not be sent in clear unless the time of initiating the warning message is such that no compromise of security is involved, and when their passage in clear language is essential to troop safety. Only coding systems which meet NATO security criteria will be used.

11. OTHER WARNINGS

a. It is recognized that it is impractical to obtain warnings of surface-to-air (for instance, air defence) nuclear bursts which may occur at low altitudes, and to disseminate such warnings to armed forces personnel.

b. Similarly, it may be impractical to provide warnings to the Naval and Air Forces concerned of intended surface-to-surface strikes delivered by weapons within the corps, especially for fleeting targets or when reaction times are short. Nevertheless, it is the responsibility of Army agencies to provide warning to Naval and Air Forces concerned whenever possible.

12. IMPLEMENTATION OF THE AGREEMENT

a. This STANAG is considered to be implemented when the necessary orders/instructions putting the procedures detailed in this agreement into effect have been issued to the forces concerned.

b. Related Documents:

- (1) STANAG 2047 – Emergency Alarms of Hazard or Attack (NBC and Air Attack only).
- (2) STANAG 2083 – Commanders' Guide on Radiation Exposure.
- (3) STANAG 2099 – Fire Coordination in Support of Land Forces.
- (4) STANAG 2103 – Reporting Nuclear Detonations, Radioactive Fallout and Biological and Chemical Attacks.
- (5) STANAG 2111 – Target Analysis – Nuclear Weapons.

Appendix N

References

N-1. Army Regulations (AR)

50-5	Nuclear Surety
50-6	Chemical Surety Program
50-100 series	Safety Rules for Army Nuclear Weapons Systems
55-203	Movement of Nuclear Weapons, Nuclear Components and Related Classified Nonnuclear Materiel
310-25	Dictionary of US Army Terms
310-50	Authorized Abbreviations and Brevity Codes

N-2. Department of the Army Pamphlet (DA Pam)

310-3	Index of Doctrinal, Training, and Organizational Publications
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N-3. Table of Organization and Equipment (TOE)

52-2	Headquarters and Headquarters Company, Corps or Airborne Corps
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N-4. Field Manuals (FM)

1-15	Aviation Reference Data
1-100	Army Aviation Utilization
3-10	Employment of Chemical Agents
3-22	Fallout Prediction
6-1	TACFIRE Operations
6-2	Field Artillery Survey
6-13F1/2	The Soldier's Manual for Military Occupation Specialty 13F
6-15	Field Artillery Meteorology
6-20-1	Field Artillery Cannon Battalion
6-20-2	Division Artillery, Field Artillery Brigade, and Field Artillery Section (Corps)*
6-30	FA Bn, Lance
6-39	Pershing Organization (U)
6-40	Field Artillery Cannon Gunnery
6-42	Field Artillery Battalion, Lance
6-50	The Field Artillery Cannon Battery
6-121	Field Artillery Target Acquisition
7-7	The Mechanized Infantry Platoon/Squad
7-8	The Light Infantry Platoon/Squad*

*To be published

7-10	The Rifle Company, Platoons, and Squads
7-20	The Infantry Battalions
11-50	Combat Communications Within the Division
11-92	Combat Communications Within the Corps
17-12	Tank Gunnery (How to Fight)
17-30	The Armored Brigade
17-50	Attack Helicopter Operations
17-95	Cavalry
20-60	Battlefield Illumination
21-26	Map Reading
21-30	Military Symbols
21-40	NBC Defense
24-1	Combat Communications
30-5	Combat Intelligence
30-102	Opposing Forces: Europe
31-10	Denial Operations and Barriers (will be revised as FM 90-7)
31-16	Counter guerrilla Operation (will be FM 90-8)
44-1	US Army Air Defense Artillery Employment
44-62	Air Defense Artillery Automatic Weapon Gunnery
57-35	Airmobile Operations
71-1	The Tank and Mechanized Infantry Company Team
71-2	The Tank and Mechanized Battalion Task Force
71-100	Brigade and Division Operations (Mechanized and Armor)
71-101	Brigade and Division Operations (Infantry/Airborne/Airmobile)*
90-1	Employment of Army Aviation Units in a High Threat Environment
90-2	Tactical Deception
90-3	Desert Operations
90-5	Jungle Operations*
90-6	Mountain Operations*
90-7	Denial Operations*
90-10	Military Operations on Urbanized Terrain (MOUT)
90-11	Winter Operations*
90-13	River Crossing Operations
100-5	Operations
100-15	Corps Operations (NOTE: Under revision as FM 100-15, "Operations")
100-26	The Air-Ground Operations System
100-42	Airspace Management in Area of Operations
100-50	Nuclear Unit Operations in Combat
101-5	Staff Officers Field Manual: Staff Organization and Procedure (NOTE: Under revision as FM 101-5, Command and Control of Combat Operations)
101-31-1	Staff Officers Field Manual: Nuclear Weapons Employment, Doctrine, and Procedures
101-31-2	Staff Officers Field Manual: Nuclear Weapons Employment Effects Data (U)
105-5	Maneuver Control

*To be published

N-5. Technical Manuals (TM)

9-1300-200	Ammunition, General
39-0-1A	Numerical Index to Joint Atomic Weapons Publications (U)
39-4-1	Glossary of Nuclear Weapons Material and Related Terms
55-1520-221-10	Operator's Manual: Army Model AHIG Helicopter

N-6. Training Circulars (TC)

1-4	Helicopter Gunnery
6-10	Field Artillery Communications
6-20-10	Fire Support Team
21-5-7	Training Management in Battalions

N-7. Army Training and Evaluation Programs (ARTEP)

6 Series	Field Artillery Organizations
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N-8. Joint Munitions Effectiveness Manuals

FM 101-50-1	Joint Munitions Effectiveness Manual/Air-to-Surface: Weapon Effectiveness, Selection and Requirements, Air-Delivered Non-Nuclear (U)
FM 101-50-6	Joint Munitions Effectiveness Manual/Air-to-Surface: Air Delivered Non-Nuclear Munitions Effectiveness, A-1E/N(U)
FM 101-50-20	Joint Munitions Effectiveness Manual/Air-to-Surface: Weapon Characteristics Handbook (U)
FM 101-50-25	Air Delivered Non-Nuclear Munitions Effectiveness: Radar Deliveries, Volume 1 (U)
FM 101-60-1	Joint Munitions Effectiveness Manual/Surface-to-Surface: Effectiveness Data for Mortar, 81-mm, M29 (U)
FM 101-60-2	Joint Munitions Effectiveness Manual Surface-to-Surface: Effectiveness Data for Howitzer, 105-mm, M101A1 (U)
FM 101-60-3	Joint Munitions Effectiveness Manual Surface-to-Surface: Effectiveness Data for Howitzer, 155-mm, M109 (U)
FM 101-60-4	Joint Munitions Effectiveness Manual Surface-to-Surface: Effectiveness Data for Howitzer, 8-inch, M110 (U)
FM 101-60-5	Joint Munitions Effectiveness Manual: Surface-to-Surface Effectiveness Data for Gun 175-mm, M107 (U)
FM 101-60-6	Joint Munitions Effectiveness Manual: Surface-to-Surface Effectiveness Data for 5/38" Naval Twin-Gun Mount, MK28 and 32 with Gun Fire Control System MK37 (U)
FM 101-60-7	Joint Munitions Effectiveness Manual: Surface-to-Surface Effectiveness Data for Mortar 4.2-inch, M30 (U)
FM 101-60-8	Joint Munitions Effectiveness Manual/Surface-to-Surface Effectiveness Data for Rocket, 762-mm, M50 (HONEST JOHN) (U)

FM 101-60-9	Joint Munitions Effectiveness Manual/Surface-to-Surface: Effectiveness Data for 5/54" Naval Single-Gun Mount MK42 with Gun Fire Control System MK68 (U)
FM 101-60-12	Effectiveness Data for Tank, Combat, Full Tracked: 105-mm, Gun M60A1 (U)
FM 101-61-3	Joint Munitions Effectiveness Manual/Surface-to-Surface: Ammunition Reliability (U)
FM 101-62-1	Joint Munitions Effectiveness Manual Surface-to-Surface: Safe Distances for Fragmentary Munitions (U)
FM 101-62-3	Joint Munitions Effectiveness Manual/Surface-to-Surface: Manual of Fragmentation Data (U)

N-9. NATO Standardization Agreements (STANAGs) and ABCA Agreements (QSTAGs)

This field manual is in accordance with the provisions of the following STANAGs and QSTAGs:

STANAG 2008	Bombing, Shelling, Mortaring, and Location Reports
STANAG 2011	Target Grid Procedures
STANAG 2014	Operations Orders, Annexes to Operations Orders, Administrative/Logistic Orders
STANAG 2019	Military Symbols
STANAG 2031	Proforma for Artillery Fire Plans
STANAG 2043	Standard Procedures for Establishing Communications
STANAG 2082	Relief of Combat Troops
STANAG 2099	Fire Coordination in Support of Land Forces
STANAG 2101	Principles and Procedures for Establishing Liaison
STANAG 2147	Target Numbering System (Non-nuclear)
STANAG 2867	Radio-Telephone Procedures for the Conduct of Artillery Fire
STANAG 2875	Calls for Destruction, Smoke, Illumination, and Danger Close Missions
STANAG 2887	Tactical Tasks and Responsibilities for Control of Artillery STANAG Terminology for Control of Artillery
QSTAG 217	Terminology for Control of Artillery
QSTAG 221	Target Numbering System (Non-nuclear)

N-10. Department of the Army (DA) Forms

The following DA forms are available through normal AG Publications Supply Channels.

4655	Target List Worksheet
4656	Scheduling Worksheet

N-11. Miscellaneous Literature

ATP-35	Land Force Tactical Doctrine
AAP-5	NATO Glossary

C1, FM 6-20

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☆ U.S. GOVERNMENT PRINTING OFFICE: 1980-635-078/34



FM 6-20

30 SEPTEMBER 1977

By Order of the Secretary of the Army:

BERNARD W. ROGERS
General, United States Army
Chief of Staff

Official:

J. C. PENNINGTON
Brigadier General, United States Army
The Adjutant General

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Active Army, USAR, and ARNG: To be distributed in accordance with DA Form 12-11A and B, Requirements for Field Artillery Tactics; Field Artillery Techniques; Nonnuclear Employment of FA Weapon Systems; The Rifle Co, Platoons, and Squads; The Inf Bn; The Inf Bde; Armor Operations; The Armored Bde; Divisional Armored & Air Cavalry Units; The Armored Cav Regiment; Combat Intelligence; Electronic Warfare; The Div Support Command & Sep Bde Support Bn, Div Communications; Operations of Army Forces in the Field; Tactical Nuclear Operations (Qty rqr block no: 39, 40, 73, 78, 79, 80, 127, 130, 131, 133, 273, 325, 380, 403, 405, 411).

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*FM 6-20

Field Manual
No. 6-20

HEADQUARTERS
DEPARTMENT OF THE ARMY
Washington, DC, 30 September 1977

Fire Support in Combined Arms Operations

Note to the User

FM 6-20, *Fire Support in Combined Arms Operations*, is a special new manual in the How to Fight series. It provides the first comprehensive treatment of the maneuver commander-fire support coordinator relationship and illustrates how to integrate all fire support into combined arms operations. It was written by maneuver and fire support personnel, with input from elements throughout the Army, and is designed for use by **all members of the combined arms team**.

The **doctrine** herein is **approved for training** and forwarded for implementation Army-wide. To increase the manual's utility in daily training and operations, an encyclopedic index is provided.

FM 6-20, as the maneuver commander's and FSCoord's total fire support manual, will be followed by FM 6-21, *FA Cannon Battalion*, and FM 6-22, *Division Artillery, FA Brigade, and FA Section (Corps)*, which discuss tactics and operations at specific FA levels of organization. Each will be "product improved" as the need arises.

Users are encouraged not only to read FM 6-20 but also to use it regularly and submit changes to improve its accuracy and clarity. Recommended changes should be forwarded on DA Form 2028 to:

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Fort Sill, OK 73503
(AV 639-4679/4902)

*This FM supersedes FM 6-20, 30 August 1973; TC 6-20-1, 12 May 1975; and TC 6-20-2, 12 April 1975.

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It's not big armies that win battles...

It's the good ones.

— Marshal Maurice de Saxe



**FM 6-20 is a
How-to-Fight
Manual. It is the
Fire Support
Capstone
Manual for the
Combined
Arms Team.**

Fire support is the collective employment of mortars, field artillery, close air support, and naval gunfire in support of a battle plan. These weapon systems are the parts of the total fire support system that provide long-range, responsive, flexible combat power. Combat power is also increased by intelligence, deception, and obstacles, to name a few multipliers. However, the two primary elements of combat power are maneuver and firepower. Hence, the shorthand equation —

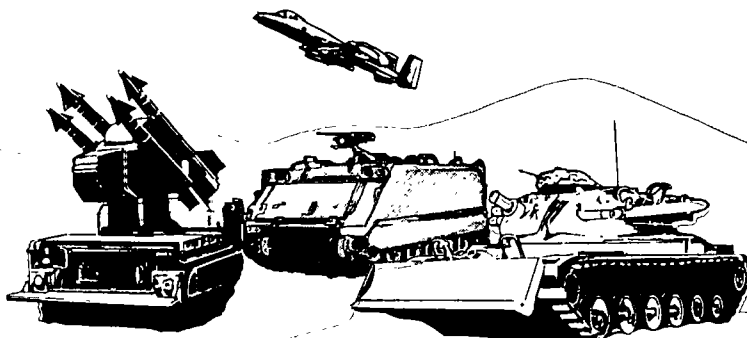
MANEUVER + FIREPOWER = COMBAT POWER

Firepower includes *all* the weapons—direct and indirect—available to the commander. Indirect fire weapons and close air support aircraft (i.e., fire support) provide the greatest portion of that firepower.

The skillful maneuver commander and field artillery commander, who is the fire support coordinator (FSCOORD), integrate fire support, direct fire, and maneuver into the battle plan concurrently. While the maneuver commander is responsible for the integration of all fires with maneuver, the FSCOORD is his principal assistant for the proper integration and application of all fire support. Working together, the maneuver commander and his FSCOORD can generate the maximum combat power available.

Therefore, this manual is not, as were previous FM 6-20's, a field artillery tactics

THE COMBINED ARMS TEAM



production written by and for field artillerymen. Rather, it is a comprehensive fire support book written by *maneuver* and *fire support* personnel for every member of the combined arms team—the commanders and their staffs—Army, Air Force, and Navy, on any battlefield in any part of the world. The expanded scope of FM 6-20 was driven by the need for a more complete understanding of *how* to integrate *all* of the force commander's firepower into battle.

FM 6-20 is designed to be the single source reference for fire support planning and coordination in the field and at service schools—it is the base document for fire support training throughout the Army.

This manual describes in detail how firepower is generated by the fire support system. It illustrates how to use proper principles, tactics, techniques, and procedures, thoroughly integrated into the scheme of maneuver, to significantly enhance combat power for the combined arms team. The maneuver doctrine and tactics used in FM 6-20 are based on FM's 100-5, 71-100, and 71-2. The scenarios in various chapters are also patterned after maneuver HOW-TO-FIGHT manuals.

FM 6-20 EXPLAINS TO THE:

Maneuver Commander

- What the fire support system is and what it can and cannot do.

- How to generate maximum combat power by integrating maneuver and fire support planning and execution concurrently.

- How to effectively use field artillery commanders, fire support officers, and fire support team chiefs as fire support coordinators.

Field Artillery Commander (FSCOORD)

- How to integrate mortar, field artillery and naval gun fires, and close air support into combined arms operations.
- How to support the maneuver commander's battle plan with long-range, flexible, responsive fires.
- How to optimize the fire support system effects.

In any fight, it's the first blow that counts; and if you keep it up hot enough, you can whip 'em as fast as they come up.

— General Nathan Bedford Forrest

The mission of the US Army is to win the next war. The challenge is how to insure that our combat forces are ready to meet the demands of that mission now!

The greatest insurance for winning is obtained through training—training the way we will fight and at the level where we will fight.

We can best increase the effect of combat multipliers by training in situations and environments that closely approximate probable combat conditions. The brigade area is where the action will be and where the application of combat power is the most critical. It is logical, therefore, that the culmination of combined arms training should be at the brigade level—training the team that will fight together to instill confidence and to build the *offensive spirit* necessary for ultimate battlefield success.

A principal theme that pervades FM 6-20 is *concurrent* (maneuver and fire support) training, battle planning, and execution. *The brigade commander who hands the battle plan to his direct support battalion commander and tells him, "Support it," will probably waste combat power, lives, and equipment.* It is imperative that commanders understand the capabilities and limitations of the fire support system and how those factors affect combat operations. Accordingly, the eight chapters are written for *all* members of the combined arms team in combat operations at *every* organizational level. They contain detailed discussions on

how to maximize the fire support system in the offense, defense, nuclear and chemical operations, and in training.

The appendixes are for field artillery commanders and their staffs in managing and operating the fire support system. They contain the technical detail required to implement the guidance in the chapters.

FM 6-20 integrates the fire support system and maneuver at all levels. FM 6-21, *FA Cannon Battalion* (to be published), addresses the battalion interface with maneuver and the operation of the battalion in combat in great detail. FM 6-22, *Division Artillery, FA Brigade, and FA Section (Corps)* (to be published), addresses the same aspects as FM 6-21 but at a higher level.

Recent dramatic advances in munition technology have and will increase the total force firepower potential on the battlefield. Consider the future commander who has at his fingertips the power of the latest antitank guided missiles (ATGM), the cannon launched guided projectile (CLGP), HELLFIRE, MAVERICK, the family of scatterable mines (FASCAM), and dual purpose improved conventional munitions (DPICM). Couple this with the TACFIRE system that electrically automates the coordination and application of these weapons over the battlefield, and consider laser designators that allow pinpoint accuracy of field artillery and Air Force weapons on moving vehicles well beyond direct fire range.

The total integration of fire support may in fact preempt the forms of combat we now know. For the maneuver commander, this means he can punish and perhaps stop an enemy without placing more forces against him where the enemy's direct and indirect massed fires are more effective. An outnumbered force cannot afford to play the game of direct, head-on confrontation.

If you are a member of the combined arms team, then, FM 6-20 is your manual. It is in looseleaf format to permit product improvement as the need arises. Write and tell us how we can make this book better so that we can fight and win if called upon.

Use FM 6-20 with:

FM 100-5, *Operations*

FM 71-100, *Brigade and Division Operations (Mechanized and Armor)*

FM 71-2, *The Tank and Mechanized Infantry Task Force*

FM 71-1, *The Tank and Mechanized Infantry Company Team*

FM 7-7, *The Mechanized Infantry Platoon/Squad*

FM 7-10, *The Rifle Company*

FM 7-20, *The Battalion (Infantry/Airborne/Air Assault/Ranger)*

These FM's and others to be published (FM 71-101, *Brigade and Division Operations (Infantry/Airborne/Air Assault)*) are all how-to-fight manuals that complement and support each other

FIELD MANUAL No. 6-20

FIRE SUPPORT IN COMBINED ARMS OPERATIONS

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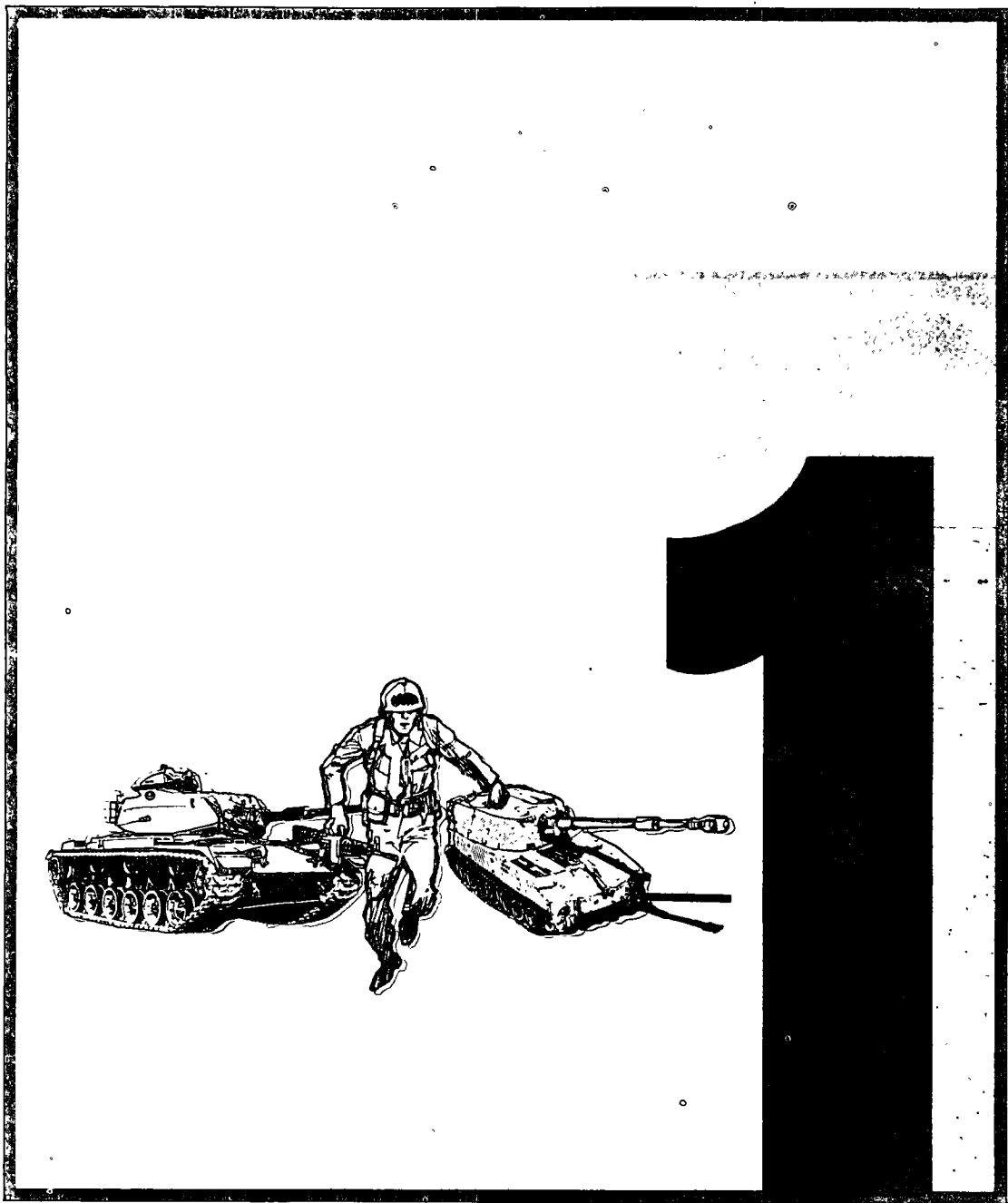
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Unless otherwise noted, where the third person singular is used in this publication, the word "he" will be understood to stand for both masculine and feminine genders.



Fire Support on the Battlefield

*The instruments of battle are valuable
only if one knows how to use them.*

— Ardant du Picq

WHY

- Maneuver and field artillery commanders must collectively generate more combat power than the enemy when and where the battle is fought.

WHAT

- This chapter is an overview of:
 - battlefield characteristics;
 - what the fire support system can do for maneuver;
 - the maneuver commander/field artillery commander relationship;
 - fire support system characteristics;
- how fire support facilitates direct fire and maneuver;
 - how to exploit fire support; and
 - fire support management initiatives.

1-1. Battlefield Characteristics

If war begins, we will face a tough, capable, numerically superior adversary. Operations will be accelerated and decisionmaking time will be shortened. The threat of nuclear/chemical war is constant, and lethality and violence will be greater than in previous battles. The first battle will be fought by those forces already at the scene, with little time for detailed preparation, extensive buildup, or deployment of additional combat units. This situation has caused battle execution to shift from corps to division and, more specifically, to the brigade where the battle will actually be fought. Such a situation generally describes central Europe and the Middle East, but worldwide circumstances impose a broader, more demanding mission upon our Army:

We must be well-trained and prepared to fight anywhere on the globe, in any intensity of warfare, and in any battlefield environment. This can be a short, violent war with little warning against large forces or a long war with some warning allowing a buildup between opposing forces. Our divisions—infantry, mechanized infantry, armored, airborne, and air assault—must be prepared for combat in built-up areas; for amphibious, guerrilla, nuclear, and chemical operations; and for desert, arctic, jungle, and mountain warfare. Succeeding chapters and appendixes describe fire support principles and techniques for worldwide contingencies.

1-2. What the Fire Support System Can Do for Maneuver

The mission of the fire support system is to suppress, neutralize, or destroy surface targets with indirect fires and close support aircraft using guns, cannons, rockets, bombs, and missiles. The fire support system provides close support for maneuver forces and counterfire. These fires range from suppressing antitank guided missiles (ATGM) to suppression of enemy air defenses. They neutralize or destroy enemy attack formations or defenses or destroy targets deep in the enemy rear with long-range missile fires. Fire support can be conventional fires in a company zone or massive nuclear and chemical fires across a corps front.

Close support fires engage enemy troops, weapons, or positions that are threatening or can threaten the force in either the attack or the defense. Close support enables the commander to *rapidly multiply* combat power effects and shift fires quickly about the battlefield. The division commander weights close support for his maneuver force by assigning tactical missions to the field artillery—direct support (DS), reinforcing (R), general support reinforcing (GSR), or general support (GS). He determines priorities for close air support (CAS) sorties to insure covering the most critical areas. These missions or priorities make fire support immediately responsive to the *brigade commanders* and to the division commander. Close support fires can provide a more favorable combat ratio. Smoke obscures enemy vision, and HE with fuze VT and dual purpose improved conventional munitions (DPICM) cause his tanks to button up. This reduces his observation, flexibility, and command and control ability; it also isolates portions of his force allowing concentration of our direct fires on isolated targets. Close support expands battlefield depth, erodes enemy forces, and inflicts damage well beyond direct fire ranges.

Counterfires attack enemy indirect fire systems to include mortar, artillery, air defense, missile, and rocket systems. Observation posts and command and control facilities are also counterfire targets. Counterfire is accomplished with mortars, cannons, guns, and aircraft. These fires are planned and executed for offensive and defensive operations, or they respond to an immediate request from a maneuver commander.

1-3. The Maneuver Commander and Field Artillery Commander Relationship

Two fundamentals pervade this manual: the relationship that must exist between the maneuver commander and the field artillery commander, and the spirit of the offense that insures ultimate battlefield success.

□ Maneuver Commander and His FSCOORD

The division artillery commander coordinates the close air sorties allocated to the division; he commands the field artillery battalions organic to the division; and he controls those in the field artillery brigade habitually associated with the division. As the division commander's FSCOORD, the division artillery commander recommends where and when to concentrate the division's fire support and the tactical missions to be assigned to fire support units. He *recommends* to the commander which maneuver elements should get minimum fire support assets and which should get all available assets. Large operations and unprecedented frontages—in both main battle area (MBA) and the covering force areas (CFA)—will demand his constant effort to recommend priorities for scarce fire support assets, to guard against wasteful shooting, and to know when to mass and when to reposition assets.

With this in mind, an effective relationship between commanders and their fire support coordinators, from corps to company team, is essential to insure the complete application of *all* available combat power. The maneuver commander must understand his fire support system and how to integrate it with his maneuver forces. The fire support coordinator must understand the need of the force throughout the battle and the techniques needed to run the system at full efficiency.

The relationship between the force commander and his fire support coordinator begins as they jointly execute combined arms training and evaluation. It continues as they work together to develop their battle plans, and it reaches fruition when a mission is assigned or assumed and the real battle is planned, fought, and won. In all this, both must know how fire support multiplies the combat power of the combined arms team.

The payoff for this joint planning and execution of operations is the *realization of total force potential* rather than wasting combat power through piecemeal application and a poorly operating combined arms team.

There is still a tendency in each separate unit . . . to be a one-handed puncher. By that I mean that the rifleman wants to shoot, the tanker to charge, the artilleryman to fire . . . that is not the way to win battles.

— MG George S. Patton, Jr., 1941

This statement was true in 1941; it will still be true in the next war.

□ The Spirit of the Offense

Ultimate battlefield success comes from *offensive action*. Although the onset of combat in Europe, for example, would be a *defensive action*, that battle must be fought with an offensive spirit. The *offense* embodies those qualities of combat that cause a positive decision. It permits initiative. As the tide of battle shifts, it allows *our* choice of objectives, direction of attack, timing of action, and creation of opportunities. With the initiative goes high morale, which promotes confidence and the vigorous execution essential to successful combat.

1-4. Fire Support System Characteristics

Allocating fire support is a critical decision for the commander. He will probably experience simultaneous attack from both *indirect* and *direct enemy fires*—and may not have enough assets to fully respond. He can get the maximum benefit from what he has by understanding essential fire support characteristics.

Massed Fires. The most unique and significant generator of *immediate* combat power is the ability of US fire support to mass fires—many battalions firing accurately on the same target. These fires meet the enemy advance and wear his forces down far from maneuver forces. They disrupt movement and slow the attack through the covering force area. They disorganize and disrupt formations massed for the main attack. They erode and slow second echelon and reserve units before they join the battle. There are *fast* massed fires and *planned* massed fires.

□ **Fast massed fires**—rounds from all available weapons to support an *immediate* tactical requirement—respond to an unforeseen problem, and available firing units in range shoot when ready. These fires can come from any support means in the area.

□ Planned massed fires—rounds from designated weapons at a *time* and *place* directed by the commander—impact in a much shorter period in the area *we* have selected, the area where our fires will damage the enemy the most. They require some planning time to achieve maximum shock and destruction effects.

The enemy achieves massed fires by placing a large array of artillery units at the position end of the trajectory. This results in heavy volumes of fire at the business end, and he has the assets to do this. To us, mass is hundreds of rounds at the business end of the trajectory—delivered from many battalions from many different locations. The division artillery commander does this because the ultimate coordination of massive firepower rests with him. Our massing capability results from a flexible responsive fire support system measured in terms of quality rather than quantity.

Responsiveness. Fire support suppresses direct and indirect fire weapons, exploits vulnerabilities, or reduces attack momentum across a wide front. Fast operations and weapon lethality demand responsive fires to attack fleeting targets, reduce formations before they attack or disperse, and react to short decisionmaking time. In combat, seconds are precious. Unresponsive fire support cannot be tolerated—it will result in lost lives and battles.

Survivability. It is essential that fire support units survive on a mobility- and firepower-dominated battlefield. The combined arms team depends on it for success. Nuclear-capable fire units are priority targets for enemy fires. Most field artillery is nuclear-capable—the same units that provide close support and counterfire. We reduce the enemy detection and position-fixing capability through positioning, avoiding predictable activities, disciplined fire control procedures, electronic warfare (EW), and operations security (OPSEC). OPSEC must be considered for each operation. It includes *deception*, *physical*

security, *signal security*, and *information security*. OPSEC increases our chances for survivability and it helps to achieve surprise against enemy forces.

Mobility. Fire support is as mobile as the supported force. When a brigade or task force maneuvers against the enemy, fire support moves in depth and laterally across the zone. Battle planners must anticipate the movement requirements of their fire support means as well as maneuver movements. An important ingredient of fire support mobility is weapons range. Long-range fires “move” rapidly across the battlefield with minimum unit displacement. Still, unit mobility is necessary to reposition forward in support of an attack or laterally and in depth to defeat a threat or a penetration anywhere in the zone of the supported or adjacent force. Mobility is critical to preserve the integrity of our combined arms teams.

Flexibility. To fully exploit the fire support system, it may be necessary to innovate and to modify established procedures. The mission is paramount: when fast attack with less accuracy will pay dividends, we must do that; when highly accurate fires are most effective, and speed is less essential, we must strive for pinpoint precision.

1-5. *How the Support Facilitates Direct Fire and Maneuver*

The tank is a prime weapon system for forcing the land battle decision—but it cannot win alone. Fire support is also an aggressive and decisive system. It fragments the enemy's combined arms team by isolating combat vehicles from support elements. His tank can be transformed from a powerful fighting machine capable of exploiting mobility, shock, and firepower into an unsupported and vulnerable vehicle that can be killed by a variety of weapons. Ammunition and POL stocks can be reduced to further inhibit enemy operations.

Only a totally integrated combined arms force can win, when outnumbered in men and materiel, against an enemy massing his force to achieve a breakthrough in an area where his massed troops and fire support are most effective.

☐ **Fire Support Facilitates Direct Fire By:**

- ☐ suppressing enemy direct fire weapons,
- ☐ suppressing indirect fire weapons,
- ☐ obscuring the vision of direct fire gunners and observers,
- ☐ slowing enemy momentum to increase direct fire engagement time,
- ☐ suppressing enemy air defenses so attack helicopters can fire the TOW, and
- ☐ suppressing enemy jammers so forward observers can use their radios.

☐ **Fire Support Facilitates Maneuver By:**

- ☐ suppressing direct and indirect fires,
- ☐ screening and isolating objectives,
- ☐ attacking reinforcements,
- ☐ covering feints,
- ☐ covering retrograde and lateral moves,
- ☐ sealing off enemy counterattacks,
- ☐ enhancing economy of force actions, and
- ☐ providing nuclear fires when the force is in jeopardy.

This discussion does not cover all that fire support can do for maneuver or direct fires; it does indicate that effectiveness is optimized only by knowledge and imaginative weapon systems employment by commanders who fight the combined arms team.

1-6. How to Exploit Fire Support

The company team or task force commander who is under attack, and has fully committed his maneuver and direct fire capabilities, must have help—he has a short time to “service” the multitude of targets that threaten him. *The commander’s greatest*

problem is how to exploit all available combat power at the right time and place.

- ☐ The maneuver commander and his FSCoord plan the battle together. The commander knows that fire support has a direct bearing on how the battle will be fought. Examining the fire support influence and contribution to the battle plan *concurrently* with maneuver considerations increases the commander’s chances of using *all* fires. This mutual planning includes evaluation and determination of
 - ☐ avenues of approach,
 - ☐ weapon systems orientation/task organizations,
 - ☐ objectives or defensive positions,
 - ☐ methods of attack or defense, and
 - ☐ time of attack or counterattack.

A commander may find in some cases that fire support considerations drive the scheme of maneuver. There may be insufficient maneuver assets to make his plan viable, or fire support may accomplish a portion of the mission without committing large troop concentrations.

- ☐ They *determine*, before the battle, *where* the enemy must be *slowed* or his positions breached so that total firepower effects are maximized for the *longest time*.
- ☐ They *prioritize* the expected enemy target array—determine what poses the greatest threat.
- ☐ They *consider* all weapons available to the team or task force: direct fire, ATGM, mortars, field artillery (all munitions combinations), close air support (all ordnance mixes), and naval gunfire.
- ☐ They *execute*. Concurrent planning *begins* with receipt or assumption of a mission, *continues* through development of the course of action, is *refined* in the operational concept, and is mutually *executed* to develop combat power.

1-7. Fire Support Management Initiatives

As stated in FM 100-5, *Operations*, future

battles will be controlled and directed by division and brigade commanders. This necessitates several actions to insure that the fire support coordinators for the division and brigade (the division artillery commander and the direct support battalion commander, respectively) are capable of doing their part.

Those field artillery brigades assigned to corps whose mission will be to support divisions now *habitually* associate with the divisions they will support, much as direct support battalions habitually support the same maneuver brigades. This measure improves training, coordination, and responsiveness and will result in faster fires for the division closely controlled by the division artillery commander. In addition, the supporting field artillery brigade headquarters gives the division fire support system an added control capability in management of fire support in all operations.

The division artillery TOC has been reorganized and augmented for counterfire management. This provides the commander and the FSCOORD the single source management of the division counterfire program. The TOC is responsible for collecting data, targeting, and applying the best fire support means to defeat the threat.

At the other end of the spectrum, a fire support team (FIST) is provided to each maneuver company. The FIST chief, a field artillery lieutenant, is the company team commander's FSCOORD. Like his FSCOORD counterparts at task force, brigade, and division, he plans and coordinates *all* the indirect fire support means available to the company. This includes mortars, field artillery, close air support, and naval gunfire.

1-8. Summary

This chapter has been an overview of the battlefield and what fire support can do for the maneuver commander. The theme of the chapter and of the entire manual is the relationship required between the maneuver commander and the FA commander, his FSCOORD, and the positive attitude embodied in the offensive spirit that wins wars. To continue with General Patton's quotation:

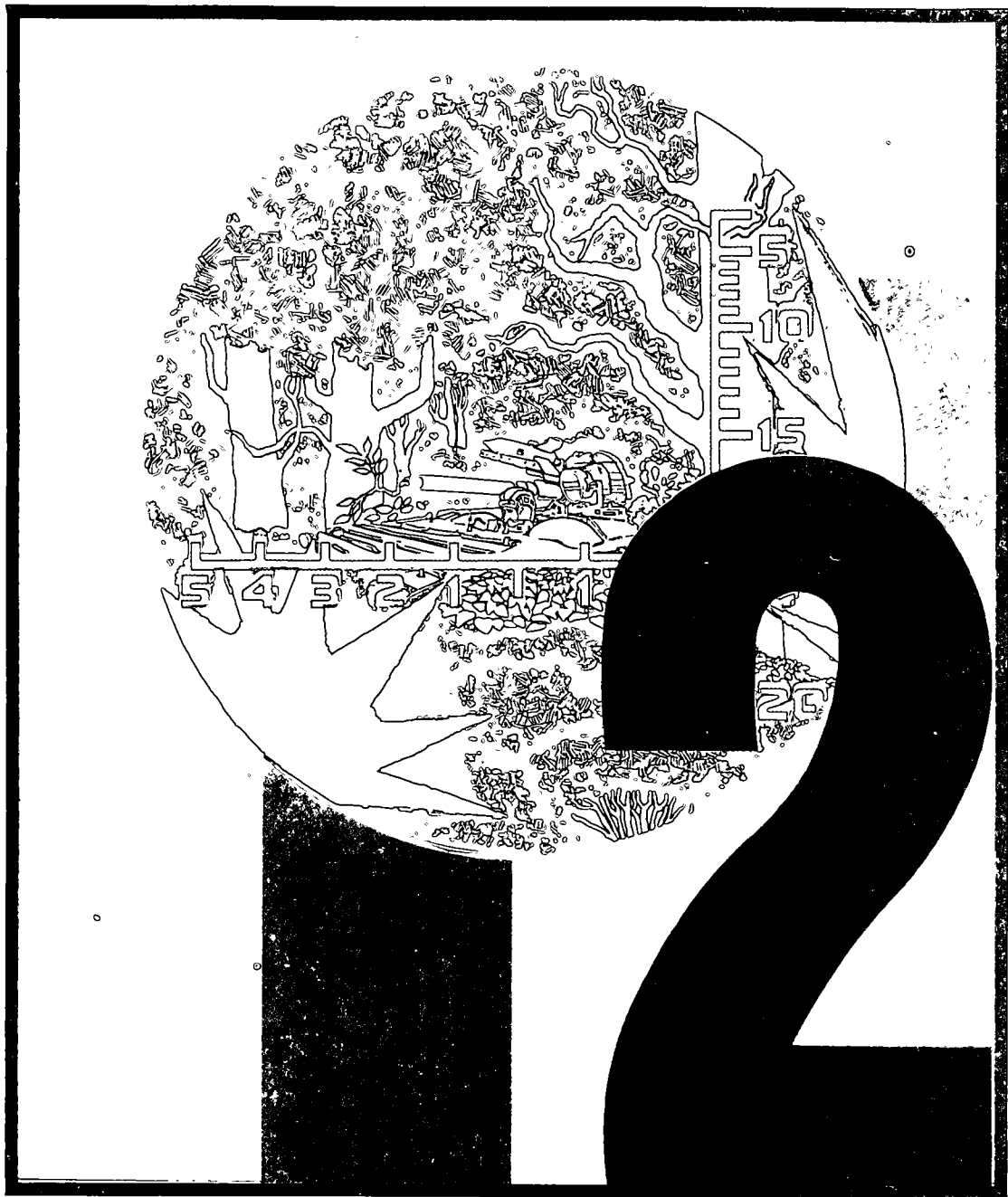
If the band played a piece first with the piccolo, then with the brass horn, then with the clarinet, and then with the trumpet, there would be a hell of a lot of noise but no music. To get harmony in music each instrument must support the others. To get harmony in battle, each weapon must support the other. Team play wins.

Chapter 2 discusses the unique challenge of our fire support system when we fight a numerically superior enemy. Subsequent chapters address the fire support system organization and operations, fire support for the offense and defense, nuclear and chemical operations, training, and new developments.

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1 2 3 4 5

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Opposing Forces

How can any man say what he should do himself if he is ignorant of what his adversary is about.

— Jomini, 1838

2-1. General

WHY

- To effectively counter opposing forces strengths and exploit their weaknesses, the combat leader must understand principal opposing forces doctrine, tactics, and organization.

WHAT

- This chapter discusses various opposing forces in conventional war and tells you the:
 - challenge for fire support in combat;
 - intelligence requirements for targeting;
- mechanized/armor (heavy) opposing force doctrine, tactics, and organization;
- fire support considerations to fight the heavy opposing force;
- infantry (light) opposing force doctrine, tactics, and organization;
- fire support considerations to fight the light opposing force.

The combat leader must consider an opposing force in two ways—as the actual force engaged and as an anticipated force in a situation we expect to face. The latter is based on our knowledge of opposing force structure, doctrine, and employment techniques. The study of opposing forces is a method of making accurate assessments of strengths and dispositions and drawing conclusions about intentions. There are dangers associated with opposing force study. The force must not, whether actual or predicted, be viewed as a frozen “snapshot” of the battlefield. Rather, it is a dynamic entity that changes with time. Memorizing “type” forces leads to inflexible planning and execution that cannot contend with unexpected opposing force initiatives. When used with experience and terrain analysis as an indicator of the opponent’s strength, composition, and employment, opposing force knowledge becomes the basis for fluid, adaptable planning and execution. The immediate issue for the commander when studying the opposing force is *how* to defeat it. A force analysis tells us how to attack, what mix of direct and indirect fire to use, what types of ammunition to fire, and which units should engage. The opposing force analysis cannot *guarantee* optimum fire support, but it can greatly increase the likelihood of effective fires, both direct and indirect, to support maneuver forces at the critical time and place.

2-2. The Challenge

The fire support system is organized to fight against opposing forces that vary from massed armor to light infantry. The effective employment of the fire support system against these forces is directly related to the combat leader's understanding of the opponent's:

- doctrine;
 - offense and defense tactics and techniques;
 - command, control, and communications procedures;
 - battle formations and equipment positioning; and
 - personnel and equipment vulnerabilities.
- The challenge for combat leaders is to:
- know how the opponent fights,
 - strip away his initiative and momentum,
 - destroy his combined arms team integrity,
 - fragment his massed formations and defeat them, and
 - turn his vulnerabilities into our advantages.

Meeting this challenge involves targeting considerations and maneuver and fire support employment planned concurrently by maneuver and fire support leaders.

2-3. Targeting Considerations

This paragraph addresses what data are needed for target planning, munition/delivery system selection, and timely attack. To get these data the target must be located and its nature determined in time to attack it.

□ Target Location

An exchange of real-time intelligence/combat information between maneuver and fire support leaders is a cardinal battlefield requirement. The payoff from this exchange is that fire support agencies *accurately* and *effectively* shift their fires about the battlefield as the ground gaining forces

maneuver and engage their units. Accurate target intelligence is vital to both maneuver forces and the fire support system. This is particularly true for the fire support system because:

- Surprise, massed fires are the most effective application of fire support and are not possible without accurate target locations. Surprise fires prevent the opponent from taking cover or dispersing as he can when he is warned by the adjustment of fires toward his position.
- Conventional munitions have a limited destruction radius. Therefore, targets must be located rapidly and accurately so munitions produce maximum effect.
- There will not be sufficient ammunition or fire units to attack all targets—even those with precise locations.

The FIST and organic FA target acquisition systems strive for accurate locations based on the above considerations. To fire unobserved fires on targets from other intelligence sources effectively, FA requires target locations that will fall within the effects radius of the firing unit. As the accuracy of reported target locations decreases, for example 300-400 meters from actual locations, several things happen:

- Zone or sweeping fire may be required to adequately cover the target area.
- Additional fire units and greater ammunition expenditures will be required.
- The element of surprise is lost as the opponent observes fires being adjusted onto his position.
- Maneuver and fire support locations can be compromised by radio vectoring, mortar/artillery locating radars, and sound flash bases.

In the final analysis, target location accuracy is a function of the desired effect, the threat posed, and the status of the available fire support system to include survey, meteorology, and ammunition. Outputs of the combat intelligence system and the FA target acquisition system are combined to provide accurate and timely target locations. The fire support system

combines the estimated accuracy of target locations with the various factors relating to the weapons systems and determines *if, when, and how* targets will be engaged.

□ Target Nature

The nature of the target is an important consideration for munition and fire support means selection. The following are a few examples:

□ HE with a variable time (VT) fuze is more effective against troops in the open than HE-PD because it covers a larger area. However, if the troops are dug in, HE-PD would be more effective because of its ability to penetrate and destroy protected positions.

□ Dual purpose improved conventional munitions (DPICM) would have a greater effect on troops in the open than either HE-PD or HE-VT because of greater area coverage. However if the troops are in a heavily forested area or dug in, the munition selection would more properly be HE-PD or HE with a delayed fuze.

The selection of the proper munition is a decision that balances the most effective munition against the relative cost and availability of that munition and the target importance. Fire support coordinators insure that the most effective munitions within availability constraints are fired. This is done by reading the battlefield with the maneuver commander and mutually insuring the greatest benefit from every round fired.

The best *mix* of fire support *means* to attack an opposing force must be selected. Consider a company team being attacked by T62 tanks and BMP's supported by air defense and antitank weapons. *The FIST chief attacks the advancing opponent well beyond TOW range. He suppresses ZSU 23-4 and SA-9 positions with field artillery HE-VT, DPICM, and smoke. On-station A-10 aircraft concentrate on destroying tanks and BMP's with Mavericks and GAU-8 30-mm cannons after the artillery has buttoned up the armor. Mortars in range shoot smoke*

behind the lead elements to obstruct command and control. As the forces press forward, antitank guided missiles (ATGM) attack them while close air support (CAS) and FA engage the second echelon.

The FIST chief and the fire support officer (FSO), in coordination with maneuver commanders, are responsible for putting together these winning fire support combinations.

□ Timeliness

There is no strict rule for timeliness other than that the target information must be readily available to support the battle. Essentially, timeliness is a function of how long the target will stay where it is or when and where it will appear.

For example, a supply depot location reported 2 days ago may be more timely than the location of a moving tank column reported 2 minutes ago. The thrust of the timeliness issue is that all intelligence/information agencies must be *concerned* about getting *data to firing units*.

The measure of intelligence timeliness is how fast that information is converted into firing data that kills the opponent and supports the scheme of maneuver.

□ The Result

As a result of the targeting considerations just discussed:

□ The opponent pays heavily in personnel and equipment for every meter of his advance.

□ We inflict more damage with less commitment of our own troops, equipment, and ammunition.

□ We have more assets left for going on the offensive and making the battle go our way.

*In our day wars are not won by mere
enthusiasm, but by technical
superiority*

— Lenin, 1918

2-4. The Mechanized/Armor (Heavy) Opposing Force

The mechanized/armor force is the backbone of the opposing forces found in Europe or the Middle East. This paragraph discusses various heavy organizations, tactics, techniques, and vulnerabilities. These considerations weigh heavily on decisions the commander must make as he plans for and fights the battle. No attempt is made to identify every target that will appear. Rather, this paragraph talks in terms of *what* the opponent can be expected to do and provides a basis for determining *how* fire support can help counteract him.

□ Basic Organization

Heavy, opposing forces are organized into flexible combined arms teams of armor, motorized infantry, field and air defense artillery, and engineers. Above the division

level, the size and composition of organizations depend upon the mission and the area of operations. These higher level organizations are *fronts* and *armies*.

A *front* may contain several combined arms armies, one or more tank armies, a tactical air army, and a substantial number of combat support (CS) and combat service support (CSS) units. *Armies* are composed of a variable number of divisions. Combined arms armies and tank armies contain a varying number of motorized rifle and tank divisions with associated CS and CSS units.

Divisions. The basic fighting force is the heavy (motorized rifle or tank) division (figs 2-1 and 2-2). This force, with its supporting elements, forms the fighting edge of the opposing force war machine and is the highest echelon with a fixed organization. The heavy division has a lean support base, and doctrine requires large stocks of supplies prepositioned well forward.

FIGURE 2-1. HEAVY THREAT MOTORIZED RIFLE DIVISION.

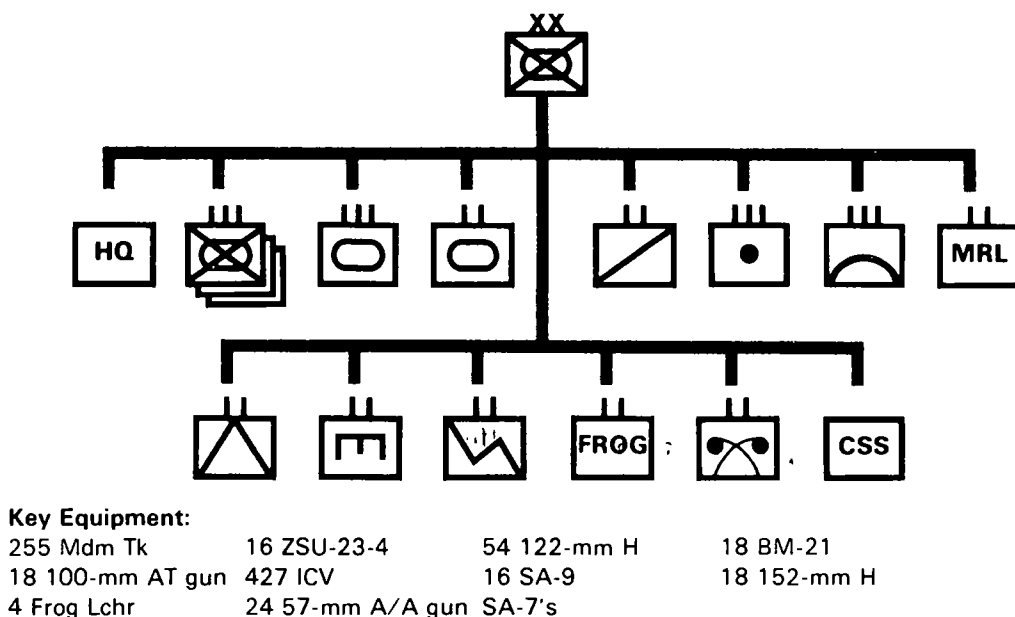
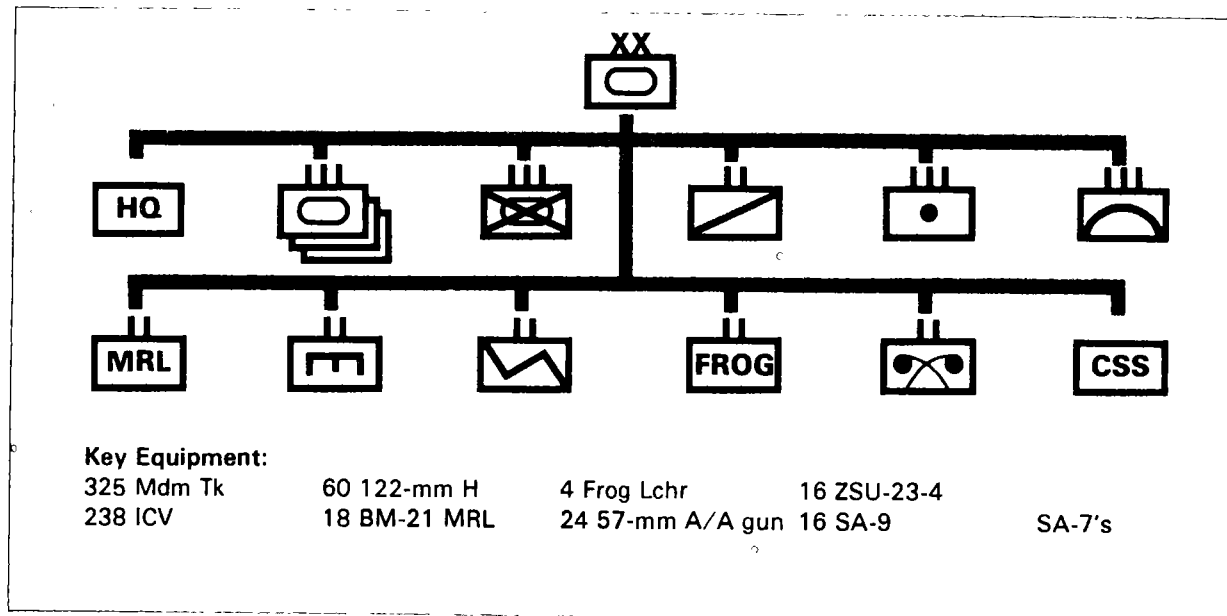
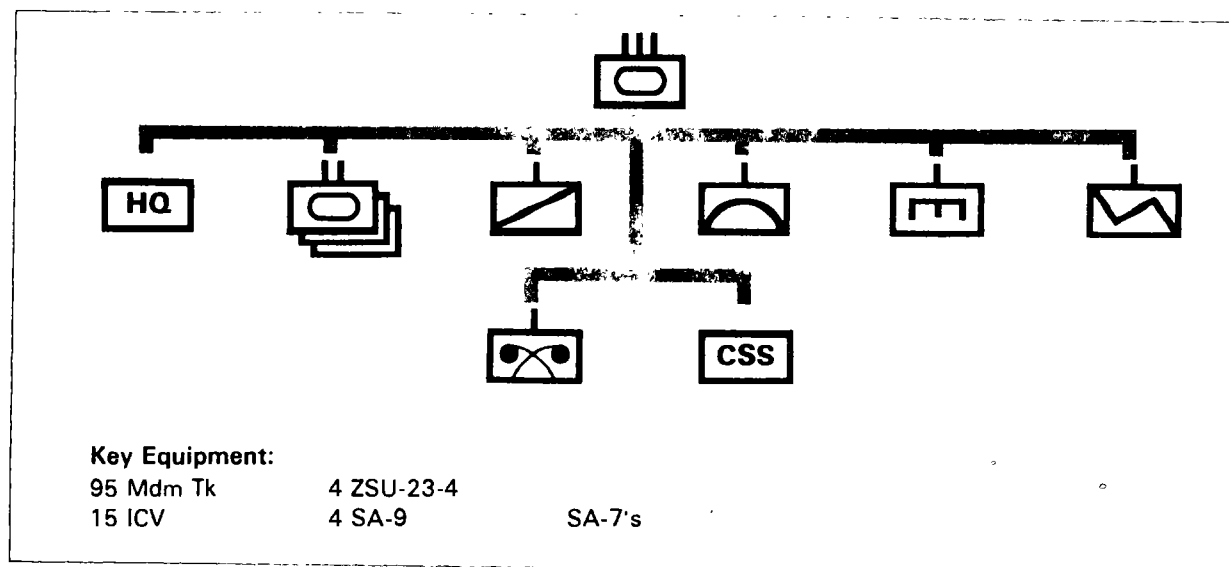


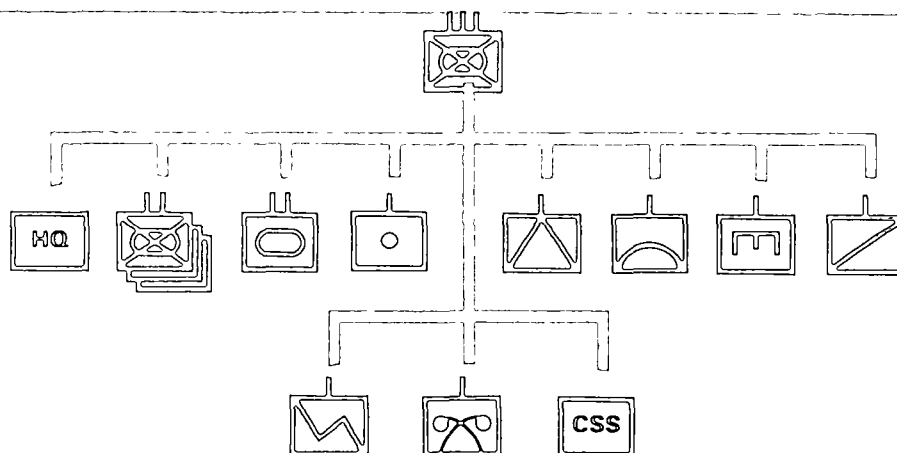
FIGURE 2-2. HEAVY THREAT TANK DIVISION.**Regiments.**

Motorized rifle and tank regiments are the major subordinate fighting elements of divisions. The tank regiment (fig 2-3) is pure—

three tank battalions—while the motorized rifle regiment (fig 2-4) has an organic tank battalion and a howitzer battery.

FIGURE 2-3. TANK REGIMENT, TANK AND MOTORIZED RIFLE DIVISIONS:

**FIGURE 2-4. MOTORIZED RIFLE REGIMENT, TANK
AND MOTORIZED RIFLE DIVISIONS.**



Key Equipment:

40 Mdm Tk

6 122-mm How
(SP or towed)

4 ZSU-23-4

117 ICV

18 120-mm Mort

4 SA-9

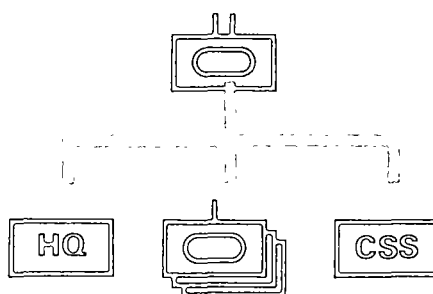
SA-7's

Battalions.

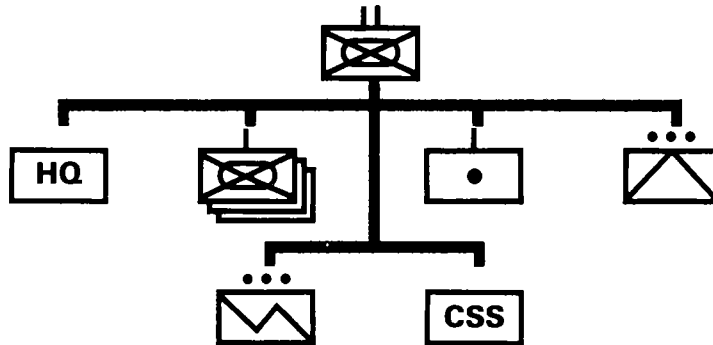
Battalions (figs 2-5 and 2-6) are generally smaller than US counterparts. The ratio of combat soldiers to organic support personnel is quite high, and staff and communications assets are austere. Centralized planning at higher levels is emphasized, and battalions

are more concerned with executing orders than planning operations. The battalion commander controls his formations with radio and visual signals, and his junior officers and NCO's are allowed little personal initiative.

FIGURE 2-5. TANK BATTALION.



Key Equipment: 31 Mdm Tk

FIGURE 2-6. MOTORIZED RIFLE BATTALION.**Key Equipment:**

32 ICV	6 120-mm Mort
2 SPG-9 AT rifle	
2 SAGGER	SA-7's

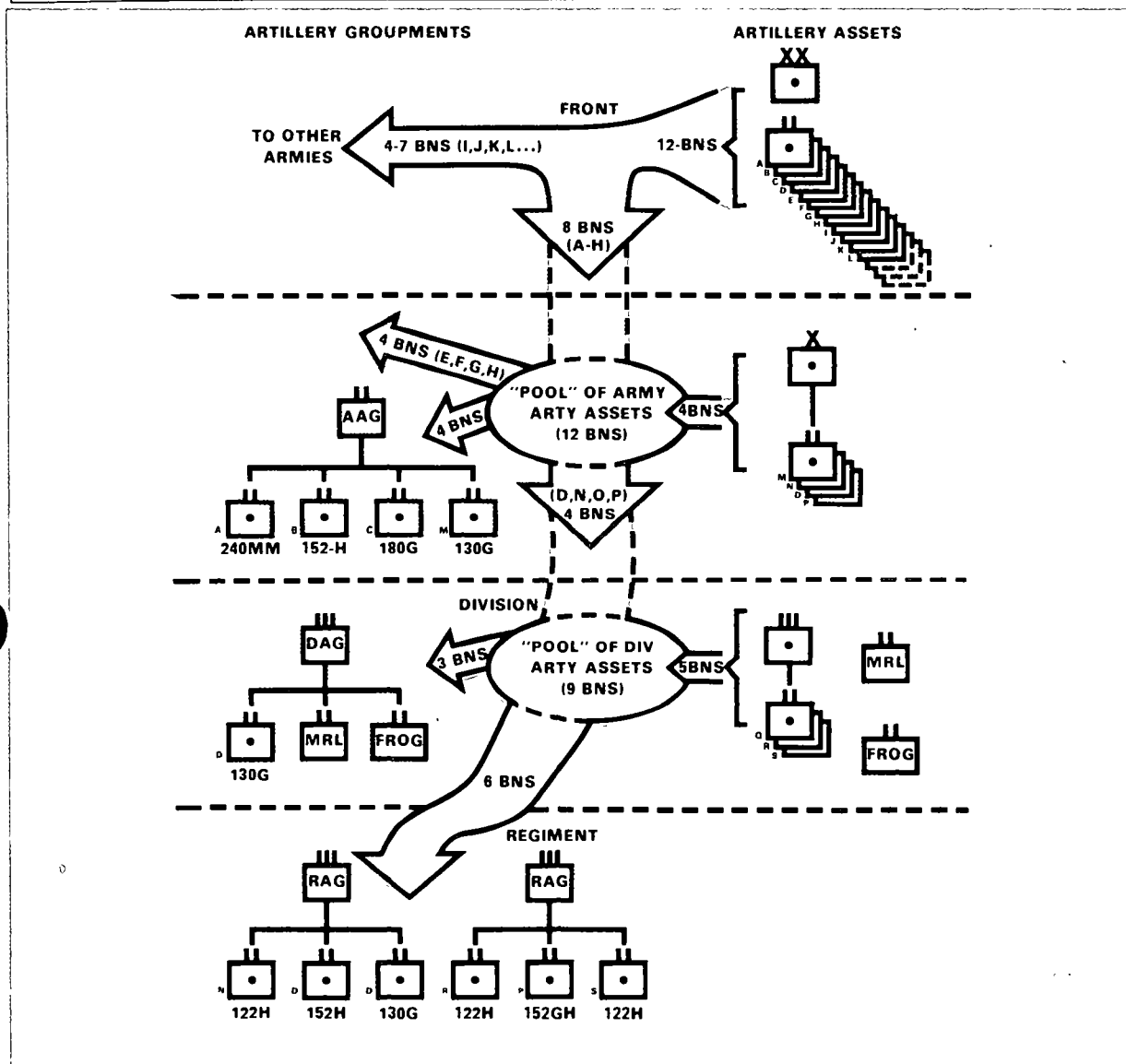
□ Artillery Organizations

At front level an artillery division usually contains several regiments of medium artillery and larger caliber guns and mortars. At army level there is often an artillery regiment or brigade composed of two or three medium caliber artillery battalions. The firepower from these echelons is allocated in support of maneuver divisions as discussed below. At division level, artillery regiments and multiple rocket launcher battalions are organic.

Artillery battalions are normally controlled by provisional groups formed at the regimental, divisional, and—occasionally—army level. Formation of these groups begins at front level (fig 2-7). The front commander allocates front artillery battalions to each committed army. *The army making the main attack or defending the most vital sector gets the most artillery.* The army commander adds these battalions to his organic artillery battalions and forms a pool. He may retain some battalions to form an army artillery group.

The remainder of the battalions, including battalions from second echelon divisions and any additional artillery provided for the army commander, are allocated to the first echelon divisions. *The division executing the major army mission gets the most artillery.* The division commander goes through a similar process. He forms a pool from the army and division assets, retains some battalions, and forms the divisional artillery group (DAG). The remaining artillery is allocated to first echelon regiments, and they form the regimental artillery groups (RAG). The composition of these groups is provisional and is changed between and during operations. The purpose of these groupments is similar to US artillery's tactical mission; that is, to control the distribution and allocation of fires and weight indirect fire support in the most important areas. Artillery groups provide massive amounts of supporting artillery. The commander of a motorized rifle regiment can have four battalions of 122-mm and 152-mm howitzers immediately available in a zone 5 to 8 kilometers wide. The regimental

FIGURE 2-7. ARTILLERY ORGANIZATIONS.



commander can be augmented by the divisional artillery group with two to four more battalions of 130-mm guns, 152-mm gun-howitzers, and BM-21 multiple rocket launchers. These units normally support army and front fire plans, divisional fire plans, and divisional counterbattery programs; but, if the situation warrants, the regiment will get these units. US forces will

be heavily outgunned, as much as from 4 to 1 to a much higher ratio at local levels. The opposing force commander can get massive close support fires and simultaneous counterbattery and interdiction fires. Also, accompanying self-propelled 122-mm gun batteries will support the maneuver force with direct fires against US strongpoints, ATGM, and other targets.

□ Target Acquisition

Opposing forces have a target acquisition system at division level designed to find and locate our units. The commander employs all of his target acquisition assets to varying degrees, but in most of his tactical operations he concentrates on the electromagnetic spectrum for timely and accurate information. Radio and radar direction finders, ground surveillance radar sections, and sound and flash ranging elements—all part of opposing forces first echelons—have a significant capability to accurately locate our fire support units and command and control centers. Their targeting data can be fed directly to firing units and, in that case, the time from "find" to "fire" is only a few minutes. Other target acquisition assets that the opposing force commander routinely employs include aerial reconnaissance and ground reconnaissance elements.

□ Doctrine

Opposing force doctrine derives from WWII experience and conditions expected on the battlefield. Doctrine is discussed here in terms of command responsibility, tactical principles, techniques, and frontages for the offense and defense.

Command Responsibility. The responsibilities of opposing force commanders are strictly defined. All commanders through division are required to make detailed personal reconnaissance of the area of operations. They personally supervise critical actions, issue detailed orders, and closely control subordinate units through command observation posts (COP). The artillery commander is located in or near the COP and from his OP provides both tactical and technical fire control for his unit. Commanders are permitted latitude in the execution of orders only when it is consistent with the intent of the higher command. *Unity of command is practiced at all levels.* The senior combat arms officer commands the combined arms force. Air armies supporting

ground forces are commanded by the front commander, a combined arms officer.

Tactical Principles. The central tactical principle is that decisive results are achieved only through offensive action. The defense is used to gain time to resume the offensive or as an economy of force measure. Supporting this principle are flexible weapons mixes and tactical organizations, echelonment of forces, use of cover and deception, and use of electronic warfare (EW) systems as weapons.

Opposing forces habitually employ flexible mixes of mutually supporting direct and indirect fire weapons at all echelons. This weapons mix is enhanced by flexible combat organizations tailored to the mission at each level. The planning and execution of missions is highly centralized, but all combat formations are extremely flexible combined arms teams of armor, infantry, field and air defense artillery, engineer, antitank, and chemical defense elements.

The commander normally echelons his force in both the offense and the defense. At each level through battalion, he analyzes the situation and determines how many echelons are required for a particular operation. Two echelons are normal in the defense or offense, but one or three may be used based on the situation. In the attack, three echelons would strike a strong enemy position on a narrow front. If the defender is weak or the front broad, one echelon may be used.

Commanders maintain a small reserve at each level except company. The reserve is usually *tank heavy* but may consist of motorized rifle and tank units, antitank and air defense artillery, engineers, chemical troops, and other units required by tactical situations. The reserve varies in size, but is normally a platoon at battalion, a company at regiment, and a battalion at division. The reserve is the commander's contingency force for unit replacements, local security, counterattacking in the defense, and exploiting or repelling counterattacks in the offense.

Offensive and defensive actions have common techniques to achieve mass, dispersion, surprise, and redundant direct and unified command and control. The opposing force commander achieves mass by rapidly concentrating men, materiel, and firepower. Concentration of assault or counterattack units and supporting elements is achieved by moving rapidly from march column into the assault, taking advantage of darkness or reduced visibility. Forces are concentrated only for the time necessary to accomplish the mission. When not concentrated, units are widely dispersed consistent with the terrain and anticipated employment.

Deception is used in every situation and at every level. It is used for economy of force, masking concentrations, and dissipating opponent firepower and maneuver assets. Preferred methods of deception are visual and audio. Deception plans make extensive use of camouflage, smoke, and terrain positioning.

Radioelectronic combat (REC), which is similar in some respects to US Army electronic warfare, is doctrine used before and during the battle to determine the location and function of all emitters used by US forces. Target priorities are assigned to the emitters. *The opposing force uses REC to engage by suppressive fires or to disrupt by jamming at least 50 percent of friendly command, control, and weapons communications and electronic systems in critical battle zones.* Communication and electronic systems used by artillery and tactical air systems are high priority targets. Opposing force radioelectronic combat units use deception, signals intercept, direction finding, jamming, and artillery in concert as an element of combat power.

Surprise is important. Under cover of strict security measures—which includes a detailed deception plan emphasizing electronic warfare, the commander concentrates his forces rapidly at the decisive

point. Tactical surprise may be gained by airborne and air-landed forces; the sudden employment of massed nuclear, chemical, and conventional fires; and immediate offensive action. Exploitation of unfavorable weather and terrain, infiltration tactics, or the introduction of large tank forces into the battle also gain surprise. The success of these tactics depends on detailed and timely intelligence and target acquisition. The use of surprise depends heavily on knowledge of friendly capabilities and intentions. At all times, the opponent can be expected to employ human intelligence (HUMINT), photo intelligence (PHOTINT) and signal intelligence/electronic warfare (SIGINT/EW) to develop an all-source picture. Some examples are:

□ **HUMINT**

Commander's reconnaissance (forward observers).

Employment of ground reconnaissance units (forward observers).

Use of intelligence agents.

Use of local civilian population.

Combat patrols designed to harass and gain information.

□ **PHOTINT**

Handheld imagery.

Use of specially-designed aircraft.

Other strategic airborne platforms.

□ **SIGINT/EW**

Use of radio and radar direction finding.

Use of jamming to cause poor COMSEC.

Use of radio intercept.

Employment of radars and sensors.

Wire tapping.

The command and control system is highly survivable. There are duplicate communications systems, backup command posts at division level and higher, and detailed operational planning. When coordination and reconnaissance time is limited, forces deploy in standard formations. They fully appreciate the necessity for detailed planning, but commanders believe that in a fast-moving situation, it is more important to move forward rapidly than delay to prepare and coordinate a detailed plan.

The meeting engagement is expected to be the most common form of combat. It is characterized by opposing forces meeting suddenly and, according to doctrine, normally follows an advance to contact. Initial combat actions are carried out by security and reconnaissance elements. The attack happens immediately from the line of march to gain the initiative through aggressive action and rapid force maneuver. Regimental self-propelled (SP) artillery batteries and possibly other artillery will move in column with maneuver battalions and support with direct fires. Maneuver battalions will also normally be accompanied by a ZSU-23-4 air defense battery. (Example attack formations are shown in figures 2-10 through 2-12.)

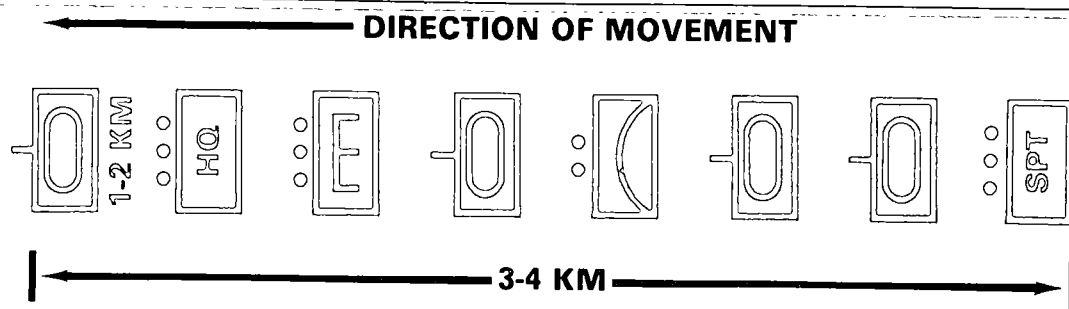
The diagram illustrates a column of armor units in a wedge formation, moving in the direction of advance (indicated by an upward arrow on the right). The units are arranged in a single file, with the front unit being a Reconnaissance unit (marked with a '+'). The column is divided into three main sections:

- RECON:** The front unit, marked with a '+', is followed by a unit marked with a '0'.
- ADVANCE DETACHMENT:** This section includes a unit marked with a '0', a unit marked with a '0' and a dot, and a unit marked with a '0' and a dot. The distance between the front unit and the start of this detachment is 'UP TO 5 POINT' (1-1 1/2 KMS).
- MAIN GUARD:** This section includes a unit marked with a '0' and a dot, followed by a unit marked with a '0' and a dot, and a unit marked with a '0' and a dot. The distance between the front unit and the start of this guard is '5-10 KMS'.
- REAR SECURITY PLT:** The rear unit, marked with a '0', is followed by a unit marked with a '0' and a dot. The distance between the front unit and the start of this platoon is 'ABOUT 3 KMS'.

Additional labels include 'H.Q.' (Headquarters) and 'SVCS' (Services).

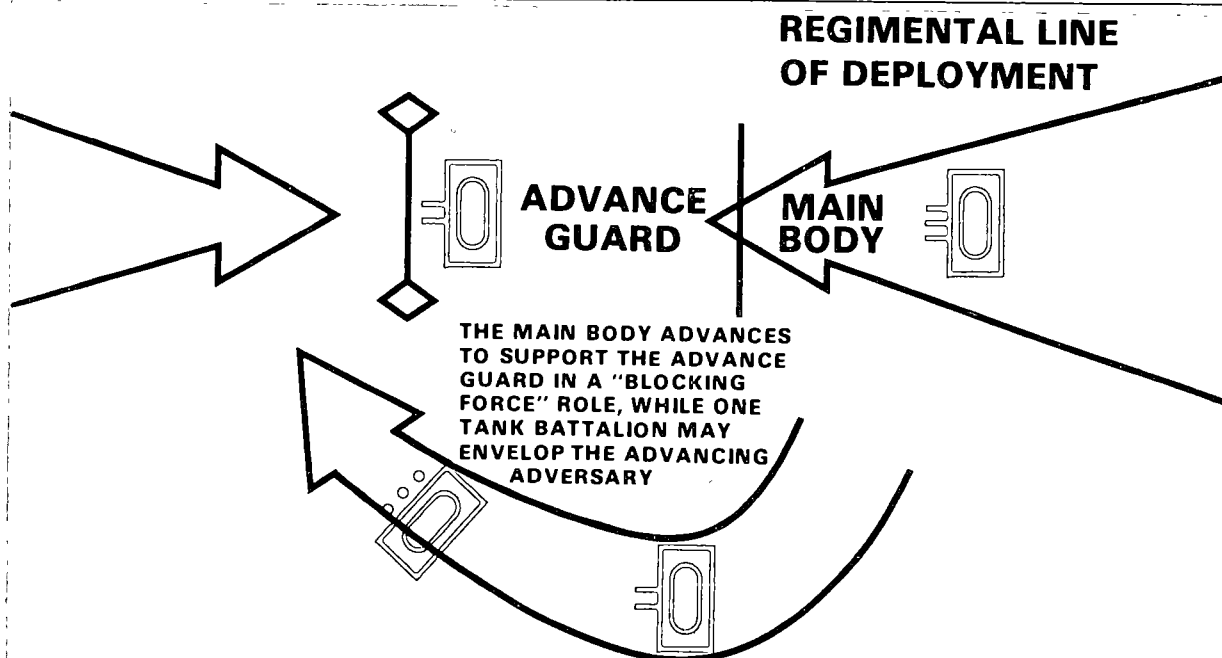
Note: Although not depicted, additional artillery under regimental control may also move with the advance guard.

FIGURE 2-9. REINFORCED TANK BATTALION AS PART OF A REGIMENTAL COLUMN.



NOTE: EACH TANK COMPANY REINFORCED WITH ONE MOTORIZED RIFLE PLT.

FIGURE 2-10. TANK REGIMENT IN A MEETING ENGAGEMENT.



NOTE: THE TANK REGIMENT WOULD BE SUPPORTED BY MOTORIZED RIFLE ELEMENTS AND AT LEAST A BATTALION OF ARTILLERY IN SUCH AN OPERATION AS IS DEPICTED HERE.

FIGURE 2-1.1. MOTORIZED REGIMENT IN THE ATTACK.

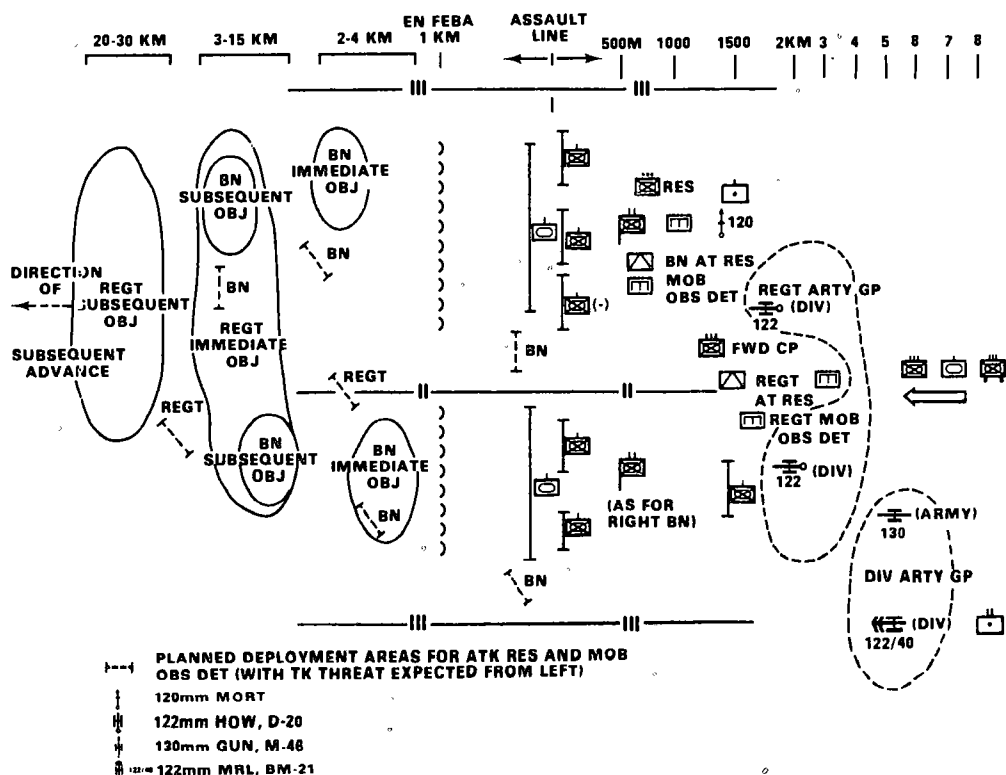
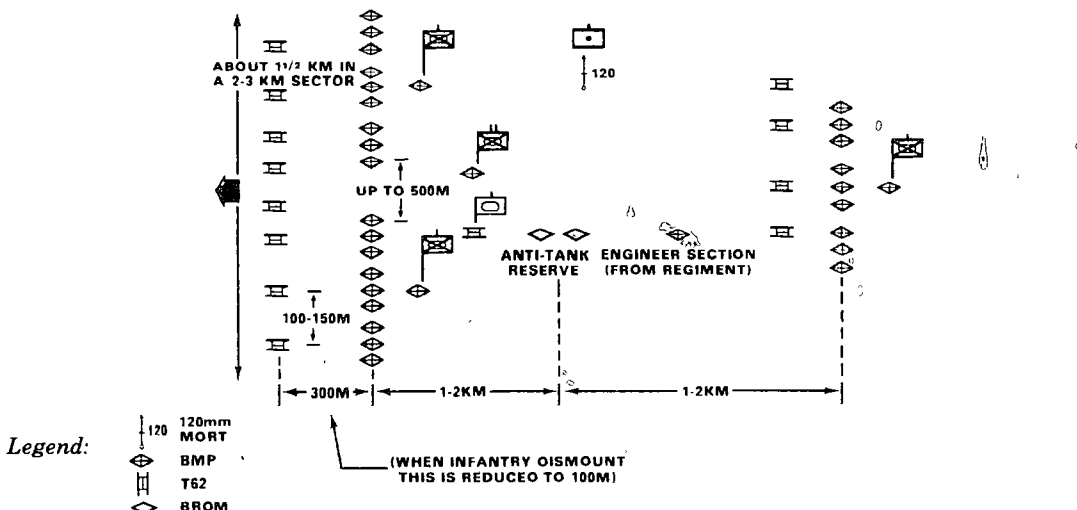


FIGURE 2-12: MOTORIZED RIFLE BATTALION IN THE ATTACK.



The commander uses two basic types of offensive maneuvers with supporting attacks—the envelopment and the penetration. Normally he will seek to bypass strongpoints and envelop defensive positions with single or double envelopments and move quickly into the enemy's rear area. If he cannot envelop the defensive positions, he will plan a penetration using strong single thrusts by a breakthrough force.

The breakthrough is used to rupture forward defenses of the opposing force. It is a meticulously planned, deliberate offensive action against forces where no gaps or flanks can be found. Attacks carry the battle to the opponent rear area. Penetrations may be in conjunction with, or exploited by, attacks on the flank or rear areas. The capture of strongpoints and key terrain is left to following echelons. Speed and shock are paramount; heavy losses and isolated units are expected and planned for. Flank security is provided by an aggressive advance. Once an offensive is underway, more emphasis is placed on moving than establishing a base of

fire.

Once the defensive line is breached, the commander begins the pursuit. He moves parallel to the opponent, cuts his forces into segments, and defeats him in detail.

The Defense. The defense is temporary, used to gain time before resuming the attack or to economize forces in one area and attack in another. An area defense oriented on antitank weapons is the basic tactic. The defense is organized in depth with belts or echelons (fig 2-13). Emphasis is placed on both natural and manmade obstacles, elaborate trench systems, extensive minefields, heavily fortified positions that the opposing force calls strongpoints (fig 2-14), and mobile antitank task groups. Enemy penetrations are met with local counterattacks. If these are unsuccessful, the defenders delay and canalize the enemy into preselected killing zones and counterattack with fires and strong tank elements. Commanders believe that if the attack's tank elements are stopped, the attack has been defeated.

FIGURE 2-13. DEFENSE WITH BELTS AND ECHELONS.

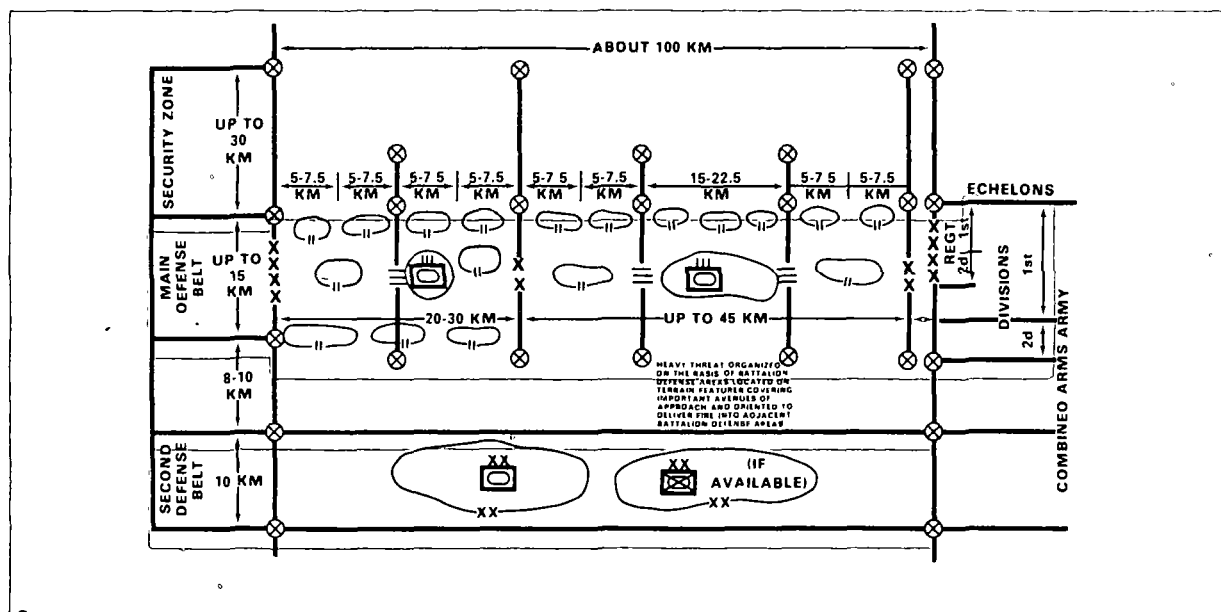
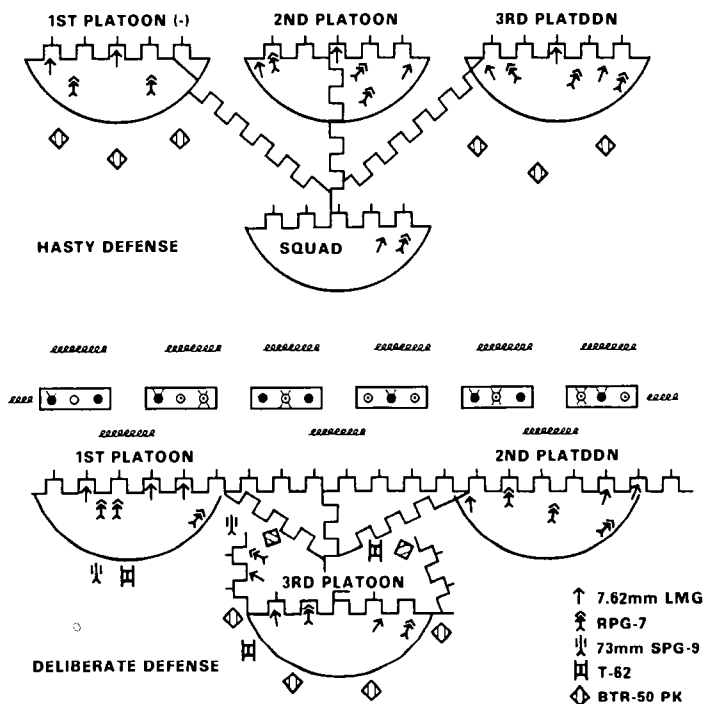


FIGURE 2-14. RIFLE COMPANY STRONGPOINTS.

In both the offense and defense, VHF/FM barrage jamming is used. In the offense it begins simultaneously with preparation fires. In the defense it is integrated with final protective fires.

□ Special Operations

Night Operations. Doctrine calls for night operations to maintain the momentum of the attack and to permit surprise attacks on objectives when terrain and opposing defenses would preclude surprise during daylight. Units are trained in night operations to insure that all soldiers can follow the measures used to control the night attack and can employ the variety of available night vision equipment.

The commander's planning starts with a detailed reconnaissance of the objective.

With the information from his reconnaissance, he formulates a plan of attack that stresses speed of execution, simplicity, and maximum use of surprise. To control the operation, the commander selects two phase lines. The first is in the enemy's forward defense area, the second is selected so its capture will force the opponent to displace his division artillery. Fire support assets are decentralized with the RAG artillery battalions attached to the lead maneuver battalions. Artillery and aircraft illumination is planned to create reference points for advancing units, mark targets for artillery fires, interfere with opponent night vision equipment, and illuminate objectives.

The execution of the commander's plan begins around twilight when the attacking forces move to deployment areas. Shortly

before dawn, the attack begins. The motorized rifle battalions attack in a single echelon with companies and platoons on line. Tanks and infantry are employed together in close coordination. If the attack is successful, the opponent commander will be able to conduct his exploitation in daylight.

Operations in Built-Up Areas. When attacking a built-up area, the commander tries to take the city before the enemy can build his defense. He divides the city and destroys the defender by segments. If surprise is lost, the opponent commander prepares a deliberate attack.

For the deliberate attack, the commander attaches medium and heavy howitzers and guns to the assault units. He plans simultaneous frontal and flanking attacks and uses sewers, subways, and utility tunnels to infiltrate reconnaissance, demolition, and assault parties. He precedes the attack by intensive reconnaissance for up to 6 days.

The attack begins by driving into enemy OP's and forward positions. Tanks cover exits from the built-up area by fire, and tank reserves engage counterattacking enemy forces. The city is divided into battalion areas. After an extensive air and artillery preparation, the battalions initiate a series of independent actions to clear every building in their area. Howitzers are attached to assault teams for direct fire on enemy positions and to breach buildings. Large caliber artillery is used for direct fire to destroy buildings. Mortars are used to provide close support for attacking elements. Outside the city, DAG battalions provide counterbattery and interdiction fires and mass against strongpoints in the city.

Doctrine for defending built-up areas is not defined as clearly as for the attack, but certain principles do guide the defense.

- Conduct built-up area defense outside the city or on an approach to the city.
- Prevent envelopment of the city.
- Maintain a large tank force outside the city to counterattack.

- Attach small artillery units or individual tanks to the force outside the city to reinforce strongpoints.

The defense is planned in depth, and buildings are used for mutually supporting strongpoints. Cellars are connected, walls common to two buildings are breached, and underground passages give the defender covered and concealed routes between strongpoints. Streets are mined and blockaded.

Desert Operations. Threat doctrine for desert operations is an extension of armored warfare doctrine; it maximizes armored force effectiveness in very large, open desert areas.

In the defense, battalion fronts are similar to those discussed earlier. Gaps are accepted between regiments and divisions. The priority is to defend major axes and objectives in depth. Gaps in minor sectors and areas with limited trafficability are lightly defended. Strong reserves, mainly tanks, are held at greater depth than normal and are used to stop enemy enveloping and encircling movements and to counterattack penetrations.

In the attack, forces assault from the line of march, deploying at high speed into platoon columns 3 to 5 kilometers from the objective. Tanks are normally employed in the first echelon. Flanking detachments penetrate gaps in enemy defense and frontal attacks are rarely used. Great emphasis is placed on direct fire from artillery.

□ Fire Support Countermeasures

Below are significant opposing force characteristics, capabilities, and vulnerabilities that have fire support implications. In the left column are the actions or strengths; in the right column are countermeasures.

HEAVY STRENGTHS OR VULNERABILITIES

COUNTERMEASURES

Strengths

1. Large mechanized and armored formations fight as a combined arms team.

2. Heavy air attacks are used, principally against deep targets, nuclear delivery systems, artillery units, and other *critical* targets.

3. Massive field artillery can be brought to bear.

4. Counterbattery and close support missions are fired simultaneously.

5. All-source intelligence collection and target acquisition means are used (HUMINT, PHOTINT, SIGINT/EW).

a. HUMINT

(1) Commander's reconnaissance and ground reconnaissance units.

(2) Intelligence agents, local civilian population, and combat patrols.

b. PHOTINT

c. SIGINT/EW

(1) Radio direction finding and intercept.

(2) Radio jamming.

1. Slow, disorganize, and fix. Cause tanks to button up and strip infantry away with indirect fire. Engage at long range with integrated direct and indirect fires.

2. Use terrain positioning, camouflage, air guards, convoy discipline, and air defense weapons. Use decoys, dummy, and alternate positions.

3. Aggressively use target acquisition assets to locate enemy batteries. Develop a well-planned, responsive counterbattery program. Task electronic warfare systems to locate opponent artillery transmitters for destruction or jamming.

4. Harden FA positions and be able to reposition rapidly.

5. Employ OPSEC techniques: deception/ countersurveillance, signal security, physical security, and information security.

5a(1) Use terrain positioning, camouflage, and concealment. Infiltrate or echelon movement in periods of reduced visibility. Use smoke, prepare false positions, and use decoys. Enforce light and noise discipline.

5a(2) Limit operational information on a "need to know" basis. Limit shotgun message traffic. Brief troops at last possible moment. Do not post operational information on windshields or other nonsecure areas. Remove signs of vehicular movement. Prepare obstacles and minefields. Use LP, OP, and patrols. Use guards and security forces. Use challenge and password.

5b. Use air defense weapons, terrain positioning, camouflage and concealment, light and litter discipline, traffic discipline, alternate positions, false positions, and decoys.

5c(1) Use couriers, wire, directional antennas, minimum radio traffic, low power on radios, and terrain masked antennas. Use secure radios and authorized codes and call signs. Impose radio silence. Defer exposure of fire direction nets by initially operating in the command/fire direction (CF) net and the CF alternate net.

5c(2) Work through jamming with high-power transmissions. Destroy or jam enemy EW equipment.

HEAVY STRENGTHS OR VULNERABILITIES

COUNTERMEASURES

(3) Radars and sensors.

6. Forces will be echeloned in depth.

7. There will be tank heavy reserves.

8. Mass is achieved by rapid concentration of men, materiel, and firepower.

9. Deception will be habitually used.

10. Speed and shock is emphasized rather than "fire and maneuver." (Breakthrough tactics.)

11. The defense is antitank and strongpoint oriented with tank heavy mobile reserves.

12. Extensive night operations.

5c(3) Use noncontinuous radar operation. Point radars away from enemy when calibrating. Fire simultaneously from multiple positions and use simulators to saturate and confuse the enemy system. Use offset registrations and terrain masking. Smoke OP's. Use radar direction-finding equipment to locate countermortar/battery radars. Jam when destruction is impractical. Fire on known locations.

6. Identify and attack second echelon forces at maximum ranges. Insure rapid and continuous coordination between maneuver and fire support leaders to prioritize targets.

7. Location of the reserve forces is a high priority mission for intelligence agencies and target acquisition systems. Once located, attack with antitank munitions.

8. The massing of forces, whether by the second echelon or the reserve, presents a lucrative nuclear or conventional target. Rapid response is necessary because forces will be massed for as short a time as possible. Use massed fires.

9. Insure close cooperation and sharing of intelligence between fire support leaders and the force intelligence staff for development of a complete target information/intelligence picture.

10. Develop SOP procedures that preclude lengthy coordination. Employ all combat support agencies to slow, disrupt, and canalize the advance. Engage at maximum indirect fire range and use massed fires, shifted rapidly. Jam communications; attack command posts and artillery positioned in depth. Reposition to keep maximum pressure on the enemy. Keep our communications operating. Prioritize targets in the breakthrough area along with counterfire requirements.

11. Isolate antitank strongpoints with smoke and suppressive fires, then attack with maneuver forces. Target mobile reserve and indirect fire weapons early. Decide when to initiate counterfire—this is critical.

12. Cue all-source intelligence assets against likely assembly areas and target to disrupt attack preparations. Smoke and jamming complement each other to disrupt command and control. Fire support units are prepared to reposition.

HEAVY STRENGTHS OR VULNERABILITIES

13. Attempts to take a city before defenses can be completed.
14. Attempts to infiltrate and divide built-up areas and destroy the defender piecemeal.
15. Desert operations are an extension of basic armored doctrine; wider frontages are planned.

Vulnerabilities

1. There are lean support bases, and reliance on pre-positioned supplies.
2. Communications are excellent; however, at company level, primary command and control is with visual signals.
3. Artillery command observation post (COP) is "heart" of the fire support system.
4. Illumination and pyrotechnics are used to mark objectives at night.

COUNTERMEASURES

13. Engage as far from built-up area as possible with indirect fire means. This will give maneuver forces time to prepare defenses.
14. Use city maps and utility plans to locate and target infiltration routes. Isolate portions of the opponent force by causing rubble to canalize and to create kill zones. Use smoke and nonpersistent chemicals with antipersonnel munitions to separate tanks and infantry. Fire high angle on azimuths perpendicular to direction of attack. Position the majority of artillery outside the city.
15. Accurate long range intelligence is key to success. CAS and FA are used at maximum range to attack threat force in columns. Use FA to suppress air defense weapons; use CAS to kill tanks. Use fire to cover gaps in the wide frontage defense.
1. Target rear area supply depots and pre-positioned stocks.
2. Jam command nets and locate transmitters. Fire on located command/control facilities. Use smoke to degrade visual command and control. Command and artillery OP's are high priority targets.
3. Attack as part of the counterfire program. Use antipersonnel munitions, smoke, and jamming
4. Illuminate the battlefield over the enemy. Fire colored pyrotechnics to confuse enemy maneuver elements.

The first law of war is to preserve ourselves and destroy the enemy.

— Mao Tse-tung, 1937

2-5. The Infantry (Light) Opposing Force

The predominantly infantry force is the backbone of opposing forces found in Asia.

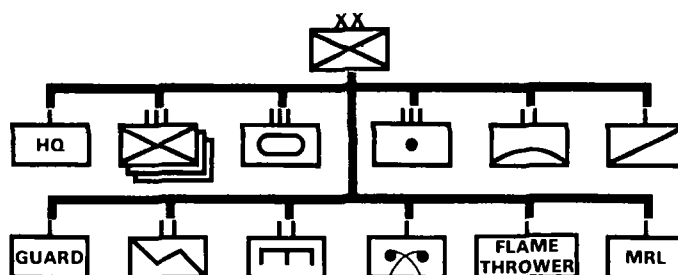
□ Organizations

The light force has armored, mechanized artillery, antitank, antiaircraft, and engineer units, but the majority of its forces is infantry. In the field army, there are normally three infantry divisions, an

artillery regiment, and other supporting units. Field armies are controlled by military region commanders in peacetime and by theater commanders in wartime.

Divisions. Divisions have fixed organizations. The infantry division is shown in figure 2-15. The armored division is shown in figure 2-16. There are very few armored divisions in the light forces. Shortages of equipment, spare parts, and the lack of a logistics system to support these divisions limit their effectiveness.

FIGURE 2-15. INFANTRY DIVISION.



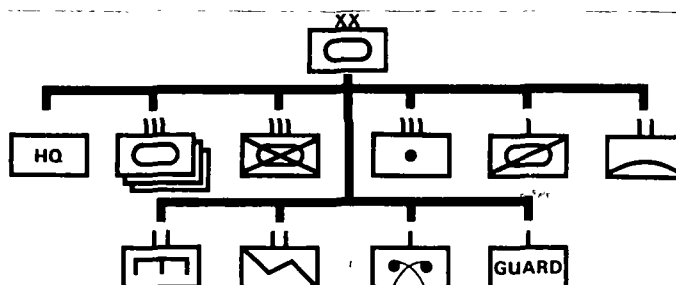
Key Equipment:

32 Mdm Tk
10 Assault Gun
18 37/57-mm A/A Gun

373 Trk, Cgo
12 122-mm How
SA-7's

18 107-mm MRL
12 120/160-mm Mort

FIGURE 2-16. ARMORED DIVISION.



Key Equipment:

301 Mdm Tk
85 APC
12 122-mm How

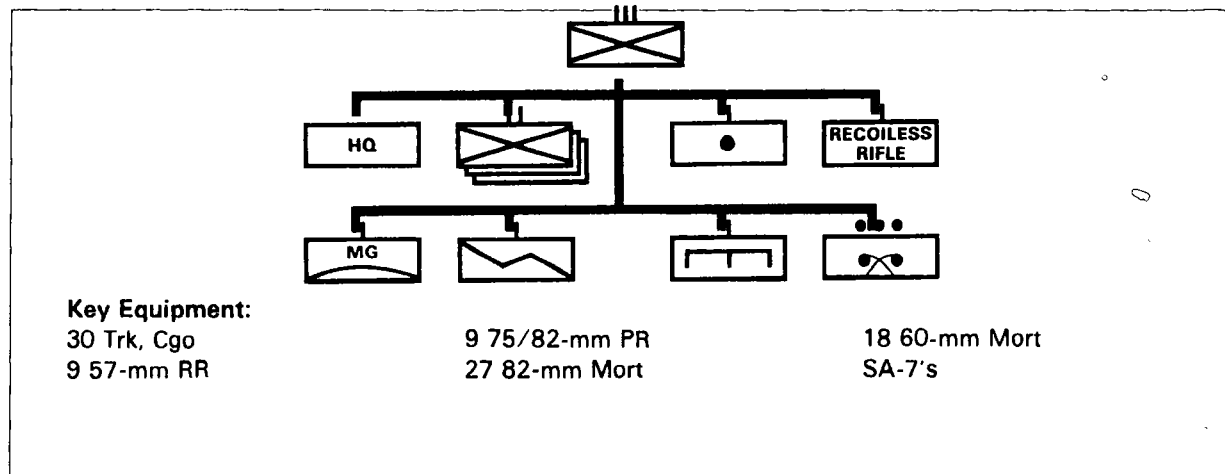
22 Armd Recon Veh
535 Trk, Cgo
15 37/57-mm A/A Gun

10 120/160-mm Mort
20 100-mm Fld Gun
SA-7's

Regiment. The infantry regiment (fig 2-17) is the backbone of the division. It has a fixed organization and is the lowest level with organic transportation. Cargo trucks

are controlled by the regimental rear services officer. Artillery and armor reinforcement is normally provided from divisional or army assets.

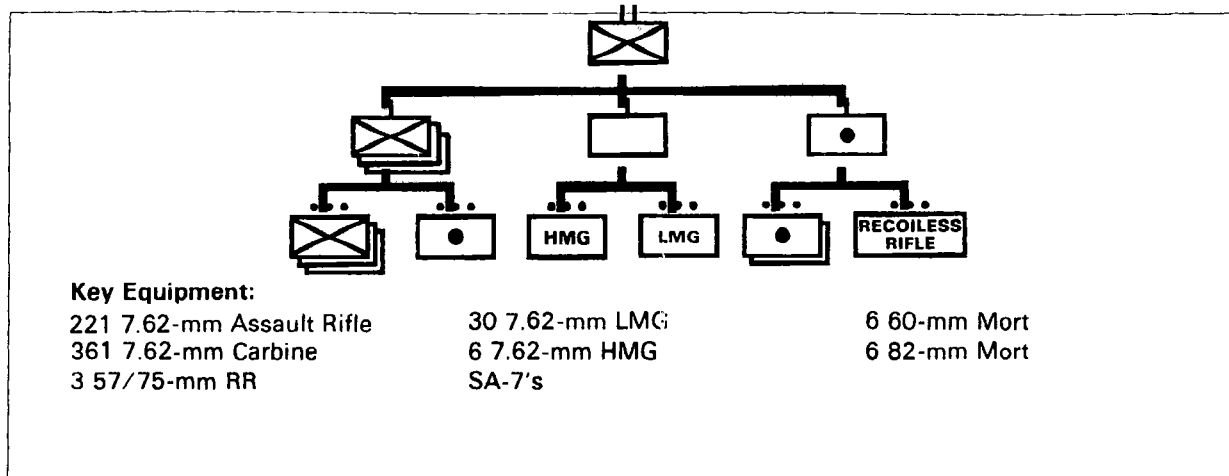
FIGURE 2-17. INFANTRY REGIMENT.



Battalion. The infantry battalion is at figure 2-18. In some battalions, there is a

combined machinegun-mortar company. The battalion has no organic transportation.

FIGURE 2-18. INFANTRY BATTALION.



Company. The infantry (light) opposing force rifle company is the smallest unit capable of independent action. Additional

fire support is provided to the company by the battalion mortar and machinegun companies.

□ Doctrine

Doctrine is influenced by ancient and modern military theoreticians and military experiences over the past 50 years. *The primary aim is to defeat a technologically superior force using infantry organizations.* Superiority in long-range weapons and massed firepower is conceded—but soldiers are trained to be "superior" in close engagements. The doctrine is to "embrace the opponent," to fight as closely as possible to him. There is emphasis on infiltration and night operations derived from guerrilla warfare experience.

Infiltration. Commanders stress infiltration of assault forces to the enemy's flanks and rear before an assault. This is to destroy enemy morale and establish blocking positions in rear areas. Forces are infiltrated to frontal assault positions close to the enemy to achieve surprise when the assault is initiated.

Night Operations. Night operations and night training are emphasized. In particular, the techniques of stealth, flanking movements, encirclement, close combat, and employment of ruses are stressed.

Other Doctrinal Principles. The light force has a series of doctrinal principles that can be applied to all operations and a series that can be applied in guerrilla warfare. The general principles are:

- Careful preparation and planning.
- Detailed planning and rehearsal to overcome communications shortages. This leads to relatively inflexible execution of operations.

- Pre-positioning of supplies and equipment.

The guerrilla warfare principles are:

- Seek a quick decision.
- Politically mobilize and indoctrinate the people in operation areas.
- Be on the offensive tactically even when defending strategically.
- Generate local superiority in forces—4 or more to 1—even when outnumbered overall.

One overriding principle of guerrilla warfare permeates light force doctrine: Respect the enemy's capabilities and avoid direct encounters when his forces are superior.

- Establish a grass roots intelligence network.

As indicated in the *heavy force* discussion, the type of combat that can generally be anticipated is a heavy concentration of armor/mechanized forces supported by massive artillery fires. However, the type of combat that can be expected from the *light force* can take many forms. At night, individuals and small units can be expected to operate in the purest sense of guerrilla warfare. The following morning friendly forces might be attacked by multidivision forces supported by tanks and artillery. The significant point to understand is that the light force will use *any combination* of "tactical styles" or techniques to fight a battle.

The infantry (light) opposing force seeks to overcome better equipped enemy forces by stressing:

**grass roots intelligence;
political mobilization and indoctrination of indigenous personnel;
detailed planning, preparation, and rehearsal of operations;
pre-positioning of supplies and equipment;
night operations and training;
infiltration;
local superiority in forces;
close engagement for quick tactical decisions.**

FIGURE 2-19. ONE POINT, TWO SIDES TECHNIQUE.

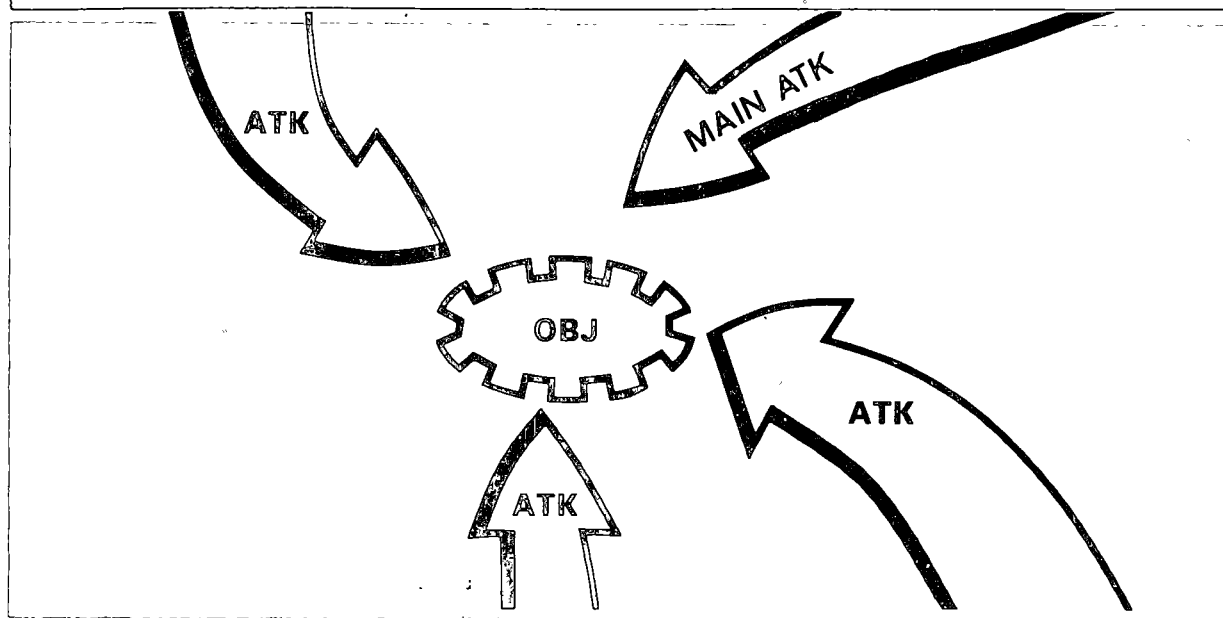
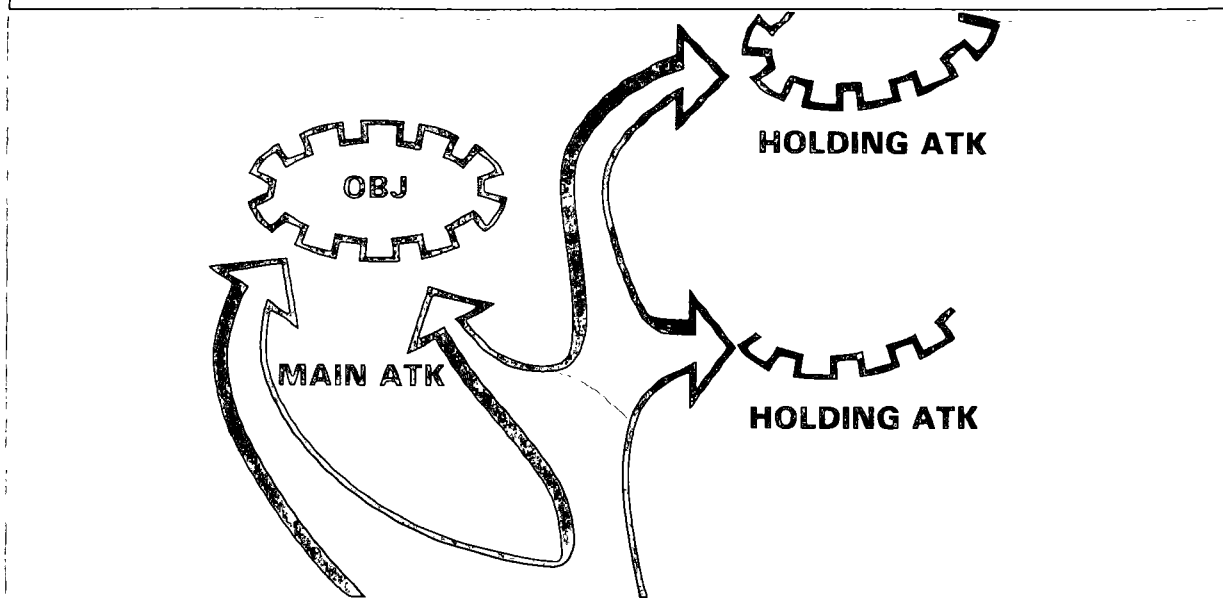


FIGURE 2-20. DIVIDE AND DESTROY TECHNIQUE.



□ Tactical Techniques

The light force uses tactical maneuvers common to all armies—the frontal attack and the envelopment in various forms. The frontal attack is avoided whenever possible.

Basically, two tactical maneuvers are employed. The first is an envelopment variation called the *"one point, two sides"* technique (fig 2-19). It calls for dividing forces into three or more groups and concentrating overwhelmingly superior strength at "one point." Simultaneously, supporting attacks are made on "two (or more) sides." This insures that the enemy can be enveloped and annihilated.

The second technique is called *"divide and destroy."* Enemy positions are penetrated and split into successively smaller groups. These positions are then assaulted by overwhelming strength (fig 2-20).

□ Artillery Fire Support

Artillery is allocated similar to that of heavy opposing forces. Artillery division assets are allocated to first echelon armies, which allocate them and some of their organic artillery to first echelon divisions. Divisions allocate to first echelon regiments, and regiments place some artillery in direct support of first echelon battalions. Second echelon divisions, regiments, and battalions may not have artillery support until they are committed.

Artillery can be organized into temporary tactical groupings. Support groups control the artillery in direct support of infantry regiments. Long-range groups control heavier artillery weapons. Some of these heavy artillery groups are in direct support of divisions; others are under army control.

Artillery commanders are habitually located with the supporting maneuver commanders to provide responsive control. Forward observers are deployed with frontline battalions.

□ Offense

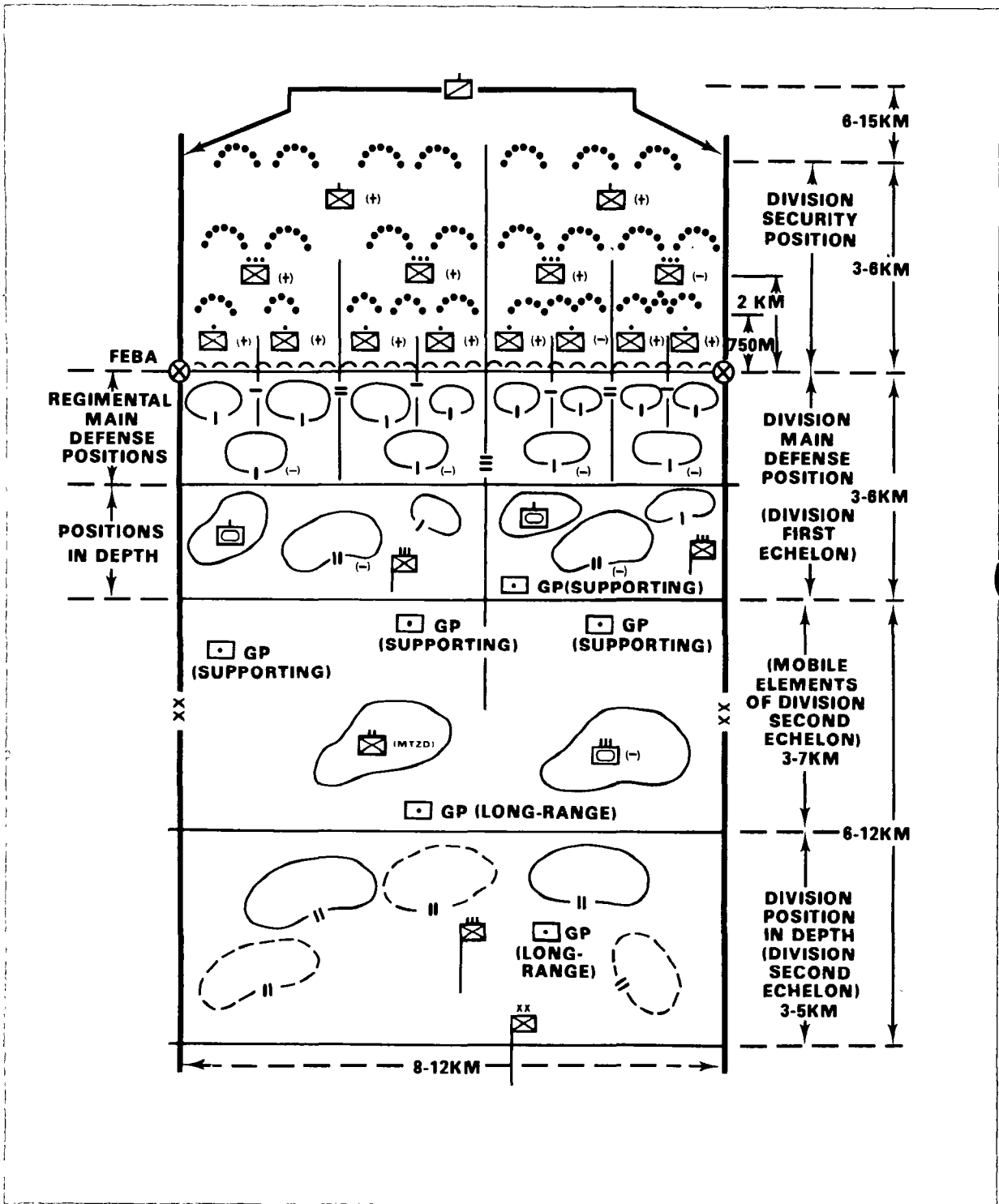
When attacking, two echelons are normally used. Depending on zone width, one or three echelons may be used. The first echelon attacks and seizes specific objectives. The second echelon supports the first and adds depth to the offense.

The second echelon is not considered a reserve. It is a committed force, although it has missions normally assigned to a reserve. If a reserve is used, its strength varies with the situation. It will be infantry heavy, motorized if possible, and well supported by fire. Battalions, companies, and platoons do not normally have reserves under their control. Regiment seldom has more than a company and division may have a regiment, but more likely a battalion. Regiments and divisions employ their reserves as prescribed by higher headquarters.

Frontages in the offense vary according to terrain, mission, enemy strength, and disposition. Strong enemy defenses and/or difficult terrain require deployment in depth and a corresponding reduction in the frontage of attacking forces.

A tank battalion (31 tanks) may be allocated to the attack echelons of the division. One regiment receives two tank companies; the other regiment receives one company. How the regiment further suballocates tanks depends on the mission, terrain, and enemy situation. A battalion might receive as many as two tank platoons (six tanks) for an assault.

FIGURE 2-21. POSITIONAL DEFENSE—THE DIVISION.



□ Defense

There are two forms of defense: *positional defense* and *mobile defense*.

The *positional defense* is composed of mutually supporting strongpoints organized in depth. It is designed to *deny vital* areas to the enemy, halt his attack, and inflict significant losses on his men and materiel. *Forward units decisively engage the enemy and hold at all costs*. No thought is given to withdrawal to successive defense positions. At the opportune moment, forces mass for the counterattack (fig 2-21).

The positional defense at any level is divided into three parts:

- Security position,
- Main defensive position,
- Positions in depth.

The security position is manned by the divisional reconnaissance company. It provides early warning and determines enemy strengths, composition, disposition, and axes of advance. Next, a regimental security force with reinforced companies from the two frontline regiments is encountered. Its mission is similar to that of the divisional reconnaissance company. Each succeeding lower echelon deploys a security force, usually two echelons lower than the unit emplacing the force—platoon for battalion, squad for company.

The main defensive position normally has two regiments to maintain forward edge of the battle area (FEBA) integrity. There are a series of interconnected strongpoints organized for all-round defense and mutual support. Each forward regiment has two echelons in defensive positions.

The divisional second echelon, unlike heavy forces, is also the reserve. It provides depth to the main defensive positions, contains any large penetration, and counterattacks to restore the FEBA.

Artillery support of one or two batteries for each battalion is allocated to each forward regiment. The regiments normally hold the tanks in reserve to counterattack along with infantry troops.

INFANTRY (LIGHT) OPPOSING FORCE DEFENSE

POSITIONAL DEFENSE:

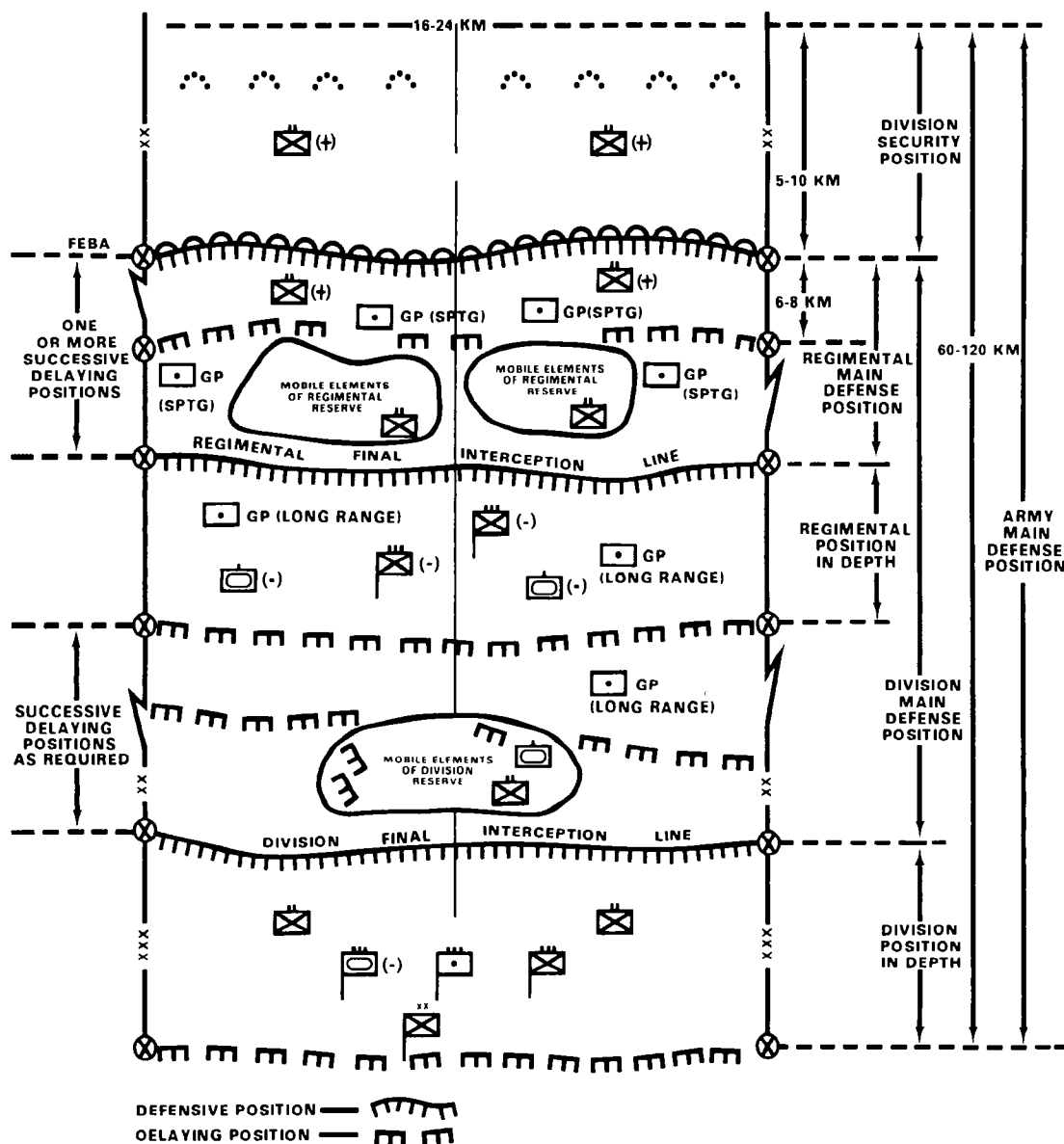
- DENIES VITAL AREAS TO THE ENEMY.
- HALTS ENEMY ATTACK.
- INFLECTS SIGNIFICANT PERSONNEL AND MATERIEL LOSSES.

MOBILE DEFENSE:

- USED WHEN TERRAIN RETENTION IS NOT CRITICAL.
- UNITS ENGAGE THE ENEMY AND WITHDRAW TO SUCCESSIVE POSITIONS.
- WHEN ENEMY IS OVEREXTENDED, HE IS OVERWHELMED WITH A VICIOUS COUNTERATTACK.

artillery and maintain contact with the enemy after withdrawal of army security forces. They delay back to the main defensive position.

FIGURE 2-22. MOBILE DEFENSE—THE DIVISION.



The divisional main defensive position normally consists of two regiments to stop the opponent forward of the regimental final intercept line. These regiments defend in two echelons with one battalion up and two back as a mobile reserve. Between the regimental rear boundary and the division final intercept line is the divisional second echelon. The divisional second echelon has the third regiment plus additional forces, probably attached from army. It covers the withdrawal of the first echelon regiments. This concept is extended rearward until the

opponent is overextended—then, the attacker is subjected to a vicious counterattack. To achieve this sort of mobile defense, divisions may be stacked behind divisions to provide more depth.

□ Fire Support Countermeasures

Below are characteristics, capabilities, and vulnerabilities that have fire support implications. Actions or capabilities are on the left, and countermeasures are on the right.

LIGHT STRENGTHS OR VULNERABILITIES

COUNTERMEASURES

Strengths

1. Well-developed night fighting and infiltration capability used to gain surprise.
2. Commanders seek a quick battlefield decision.
3. Commanders seek local superiority of numbers using the "one point, two sides" and "divide and destroy" techniques.
4. A "grass roots" intelligence network is established.
5. Forces will be echeloned in depth.
6. Field artillery is employed forward. Heavy mortars (106-mm—120-mm) are used extensively.

1. Use side-looking airborne radar (SLAR), infrared (IR), moving target locating radar (MTLR), and night devices to detect and target opponent movements. Search in the most difficult access routes. Patrol.
2. Emphasize responsive massed fire support. Heavy volumes of fire can *fix* the opponent and deny him the tactical mobility he needs for quick resolution of the battle.
3. Do detailed fire support planning so fires are shifted about the battlefield faster than men. As the opponent masses, he is a lucrative, vulnerable target for antipersonnel munitions and tactical nuclear weapons.
4. Strict adherence to local security measures, camouflage, and light noise discipline is required. Avoid establishing patterns of operation.
5. The second echelon is "committed" but it is *used* as a reserve. Target and fix it in position.
6. Cue counterbattery radars, sound and flash-ranging platoons on likely areas of employment. Mortars are particularly vulnerable to countermortar radars. Establish a "quick-fire" channel to firing units to increase responsiveness.

LIGHT STRENGTHS OR VULNERABILITIES

7 The positional defense is built around strong-points, and heavy counterattacks can be expected.

8. In the mobile defense, two-thirds of the force is a mobile reserve.

Vulnerabilities

1. The force is infantry heavy with some mechanized and armor units.

2. Small logistical bases and *all* logistic functions are controlled at division rear CP. Supplies are pre-positioned.

3. Limited motor transport available for troop movement and resupply.

4 Doctrine requires "embracing the enemy" to render fire support ineffective.

5. Lack of communications assets (few nets) leads to inflexible execution of operations.

6. Artillery commanders and FO's are employed well forward to adjust fire.

2-6. Summary

Not all countermeasure combinations that can defeat an opposing force capability or take advantage of a vulnerability were discussed. That would be a voluminous effort. The intent of this chapter is to cause thought and provide examples of how fire support can affect the battle. The cardinal notes are knowing the opponent and using his strengths, weaknesses, and

COUNTERMEASURES

7. Isolate flanking strongpoints with suppressive fires and smoke. Attack with minimum force holding attack while overwhelming force is brought to bear in zone of attack. Plan high ammunition expenditures. Attack second echelon with indirect fire to fix it in position. Jam key nets. Retain some indirect fire to suppress antitank weapons. Target pre-positioned supplies.

8. Concentrate the targeting effort on mobile and antitank reserves at each echelon. Use smoke and jamming as in countering the positional defense. Use surprise massed fires.

1. Use antipersonnel munitions and surprise massed fires extensively.

2. Cue target acquisition agencies on rear CP's, main supply points, and mobile supply point.

3. Make vehicle parks high priority targets.

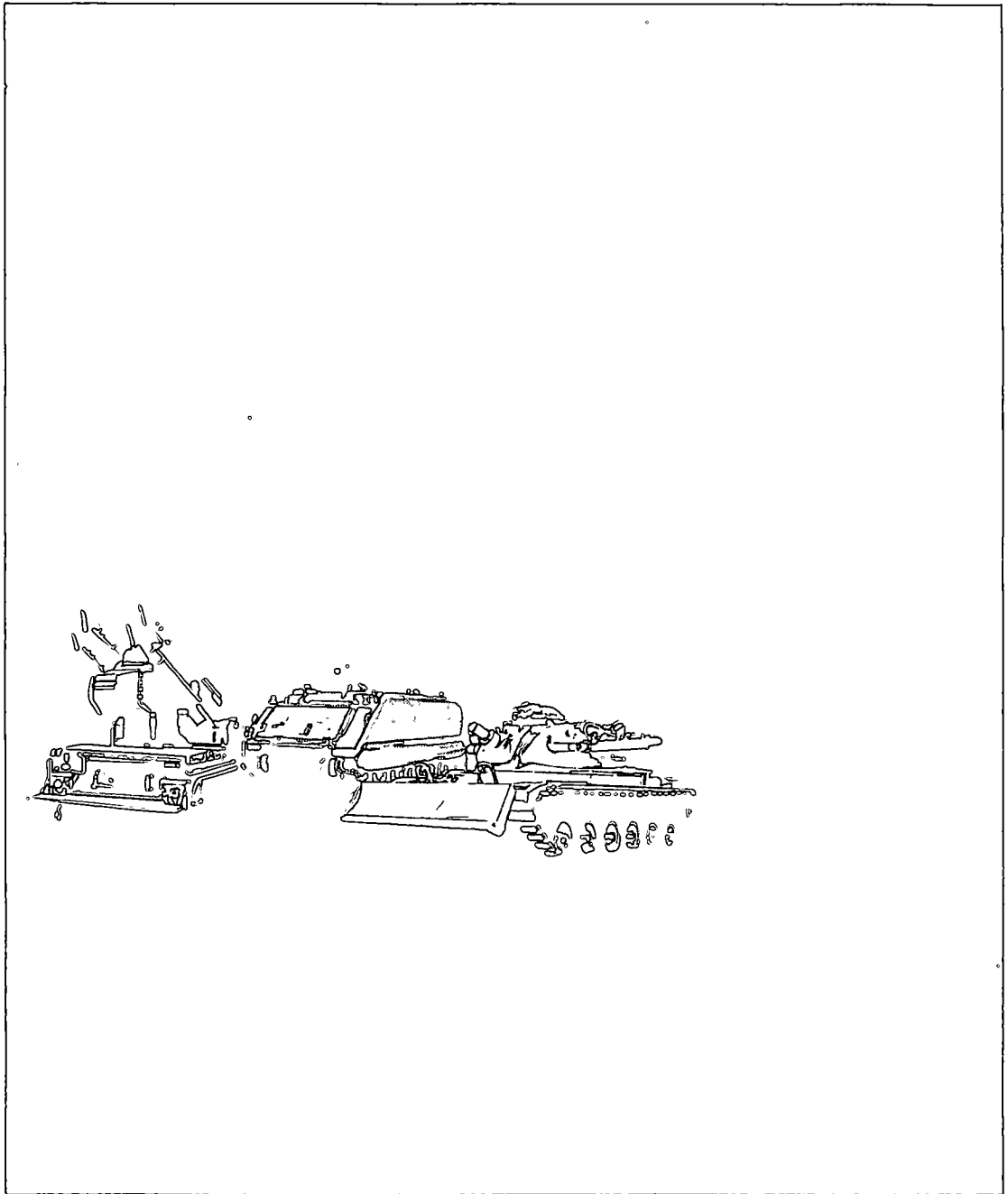
4. Use attack helicopters and CAS extensively. Fire artillery perpendicular to direction of attack to minimize range dispersion effects. Plan for heavy volumes of antipersonnel munitions close to friendly troops. Perfect quick reaction procedures to counter mass attacks initiated short distances from friendly lines.

5. Jam radio nets and DF command and control/fire support transmitters. Target transmitters for attack.

6. Use antipersonnel munitions and smoke on command OP's.

vulnerabilities to our advantage. Also prevent him from learning how, when, where, and why we *will* do, *are* doing, or *have* done something—operations security (OPSEC) is imperative. The keynote is that the enemy is not invincible; he can be cut down to size and defeated by a smaller, better army—**our army**.

The next chapter discusses how the fire support system is organized and operates as part of the winning team.



Organization & Operation of the Fire Support System

3-1. The Fire Support System

☐ Fire Support and the Commander

The maneuver commander integrates all fire support and maneuver assets to maximize combat power for the combined arms team. As he develops his plan for the employment of maneuver forces he must visualize how fire support will be used, what targets to attack with what fire support means, and the priorities for engaging targets and allocating fire units. The commander or his operations officer insures that the fire support plan is developed accordingly, that all available fire support is considered, and that the maneuver plan is enhanced. Otherwise, the commander cannot realize the full potential of either his maneuver or fire support resources—he will be wasting combat power.

WHY

- ☐ Integrating fire support and maneuver into a battle plan is vital to success. Combat leaders must understand the fire support system and how it contributes to success.

WHAT

- ☐ This chapter tells you:
 - the fire support *assets* available to the commander;
 - the *components* of the total fire support system;
 - the *personnel, agencies, and responsibilities*, for fire support planning and coordination;
 - the *composition, capabilities, and limitations* of all fire support means; and
 - *how* the fire support coordinators fit into battle planning.

☐ Combat Power and the Fire Support System

While combat power can be effectively multiplied by skillful use of intelligence, obstacles, combat service support, and electronic warfare, its two *primary* ingredients are *firepower* and *maneuver*. Thus, the shorthand expression: MANEUVER + FIREPOWER = COMBAT POWER.

Firepower and maneuver are separate, yet inseparable. Neither is paramount. Firepower includes *all* the weapons—direct and indirect—available to the commander. Indirect fire weapons provide the greater portion of that firepower and are one of the three components of the *fire support system*. These three distinct but inseparable components of the fire support system function together to provide the commander the indirect fires he needs to accomplish his mission. The three essential components are:

- ☐ *Target acquisition*—The target-locating "eyes and ears" of the system.
- ☐ *Weapons and ammunition*—The target-

attacking "muscle" of the system.

□ *Command, control, and coordination*—The "brains" of the system that direct those tactical and technical actions needed to attack targets quickly and effectively.

There are many assets that can produce targets for the fire support system. Some of these belong to fire support units themselves—USAF forward air controllers; observers, radars, sound and flash ranging sections of the field artillery; and naval gunfire spot teams. Other targets are gleaned from intelligence gathering agencies belonging to maneuver units—air cavalry, remote sensors, electronic and signal intelligence units, etc.

There are also a large number of weapons systems available to attack these targets. Usually available are

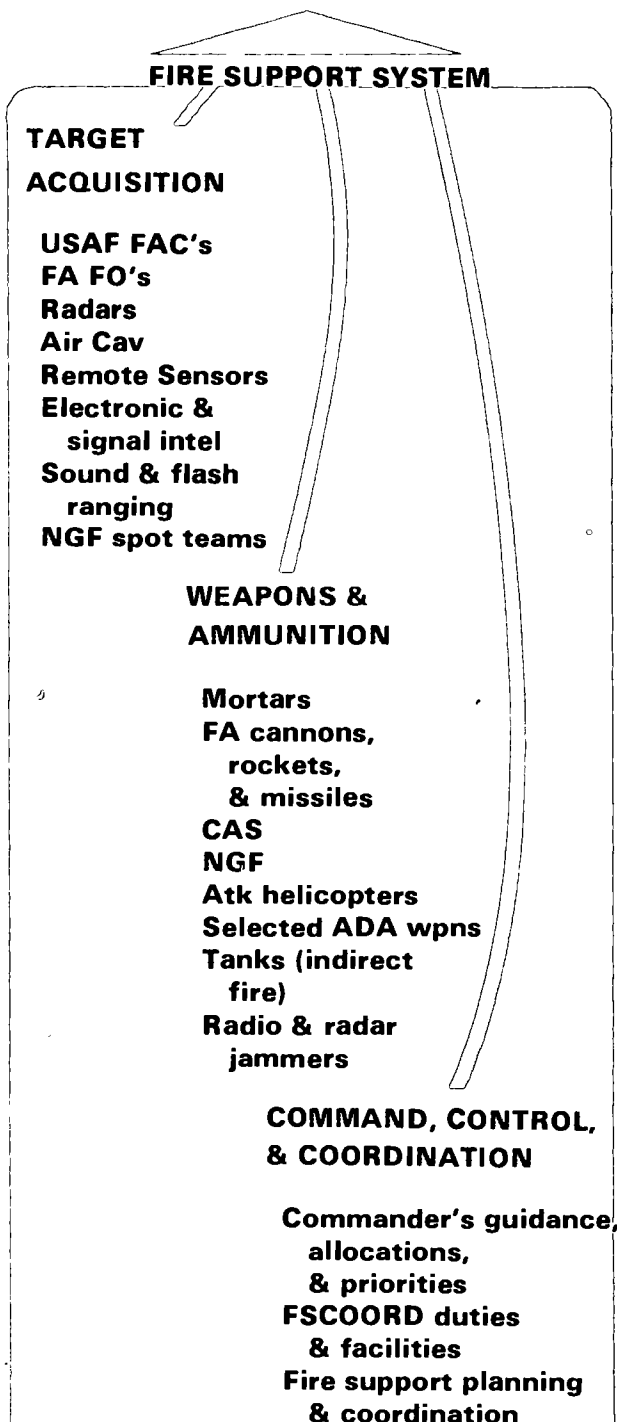
- mortars;
- field artillery (FA) cannons, rockets, and missiles;
- close air support (CAS); and
- naval gunfire.

When the situation demands and the commander directs, other systems can augment these fire support means. These include

- organic and attached helicopters,
- selected air defense weapons,
- tanks firing indirect fire, and
- radio and radar jammers.

With a large number of targets entering the system at different levels and through different channels, and with a great variety of weapons and ammunition available, the need for command, control, and coordination of fire support is obvious. If each part of the fire support system is to function in concert with the other components, someone at each echelon must be tasked with insuring that the fire support is *planned* and coordinated. The planning and coordination is a detailed and complex process, and it requires an expert. That expert is the fire support coordinator (FSCoord).

MANEUVER + FIREPOWER = COMBAT POWER



3.2. The Fire Support Coordinator

☐ FSCoord Duties

As the fire support adviser for the force, the FSCoord actively injects fire support into the commander's estimates, decisions, and concepts. He does this through close interaction with the force commander and operations officer (S3/G3) throughout the planning and execution of an operation. He anticipates missions, situations, and changes so that he can advise the commander positively on *how* fire support

can best influence the battle. The FSCoord has to know what fire support assets are available and how to use them *collectively* to maximize the effectiveness of fire support.

To maintain close coordination and cooperation with the maneuver force, FSCoord's organize and supervise a fire support coordination facility at every echelon from company to corps. This facility is collocated with the maneuver command post and puts technically qualified fire support personnel in continuous, personal contact with the maneuver operations personnel to insure responsive fires on a minute-to-minute basis.

☐ Fire Support Coordination Facilities and FSCoord's

Maneuver Echelon	Fire Support Facility	FSCoord	Assisted By
Co/Trp	Fire Support Team (FIST)	FIST Chief	Senior Fire Support SGT
Bn/Sqdn	Fire Support Element (FSE)	Fire Support Officer (FSO)	Fire Support SGT
Bde	Fire Support Element (FSE)	DS FA Battalion Commander	Bde FSO
Regt	Fire Support Element (FSE)	Fire Support Officer (FSO)	Asst FSO
Div	Fire Support Element (FSE)	Division Artillery Commander	Asst FSCoord
Corps	Fire Support Element (FSE)	Corps FA Officer	Asst FSCoord

The FSCoord, using the personnel and equipment of these facilities, makes the fire support system function through fire support planning and coordination. Appendix G has

a breakdown of the personnel, equipment, and major functions of each of the facilities listed.

3-3. Fire Support Planning and Coordination

□ Definitions

Fire Support Planning is the continuous and concurrent process of analyzing, allocating, and scheduling fire support and integrating it with maneuver to optimize combat power.

Fire Support Coordination is the continuing process of implementing fire support planning and managing the fire support assets that support the maneuver force.

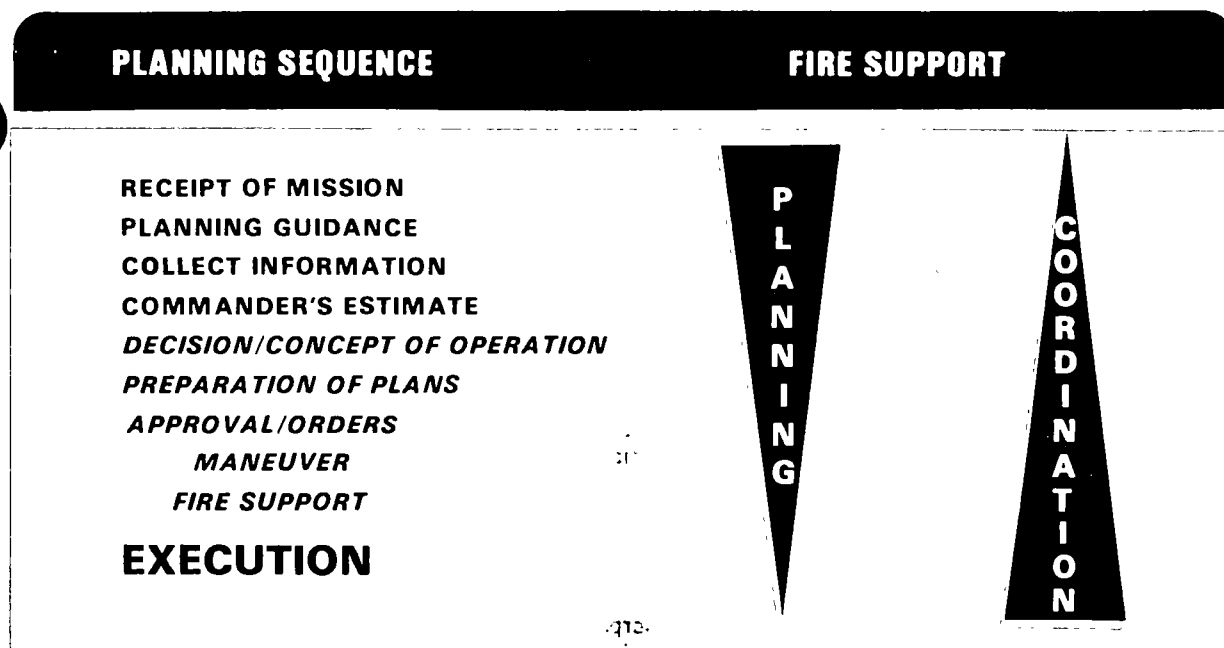
Simply stated, fire support planning addresses HOW to use support. Fire support coordination entails all those actions needed

to IMPLEMENT plans and MANAGE resources on the battlefield.

Although planning and coordination are separate, they are so clearly related that it is difficult to perceive a distinction. They occur simultaneously and overlap to the point they are mutually supporting—if the HOW (planning) has been done well, the IMPLEMENTATION (coordination) will give the commander the support he needs to win.

□ Integrating Fire Support

If fire support is to add significantly to the commander's combat power, that commander must make fire support planning and coordination an integral part of the planning and decisionmaking process that determines HOW the battle will be fought.



The planning and coordination process begins when the mission is received or assumed. The commander and his FSCoord interact throughout the planning sequence, the decision process, and the

execution of the mission. Planning dominates during the formative stages of an operation, while coordination becomes more and more important as the execution approaches.

□ Major Functions

As the FSCOORD participates with the commander in the planning and execution of the battle, he:

PLANS

- Anticipates requirements so he can advise the commander how to best use fire support.
- Assesses the fire support assets and the force mission so he can recommend priorities and allocations.
- Insures that all agencies that can provide target information are effectively used.
- Studies the enemy situation and the force mission to recommend what targets to attack and how.
- Visualizes the battle and provides the commander the flexibility to offset the unexpected and to expedite changes.
- Guides and coordinates the representatives of all fire support agencies as they contribute to the overall fire support plan.
- Determines which coordinating measures will best facilitate maneuver actions and recommends these measures to the commander.
- Builds in the necessary safeguards to protect friendly elements.
- Develops and coordinates an efficient, fully integrated fire support plan.

COORDINATES

- Anticipates the changes dictated by the developing battle and recommends revision to the fire support plan.
- Directs the attack of targets in the priority established by the commander.
- Tasks the most effective fire support means to attack targets.
- Coordinates all the fires in the commander's zone or sector.
- Insures the safeguarding of friendly elements.
- Insures continued flow of targeting information.

The accomplishment of these functions is a complex process involving all three components of the fire support system, a process that must be understood by the commander and the FSCOORD.

The remaining paragraphs of this chapter

provide a more detailed discussion of the fire support system with emphasis on the planning and coordination process and on the fire support means. Paragraph 3-12 illustrates HOW the FSCOORD fits into the planning process.

3-4. Fire Support Planning

☐ What Planning Must Do

The fire support planning goal is to completely integrate fire support with maneuver and to optimize the fire support system.

The planning process determines how fire support will be used—what type targets will be attacked, when, and with what fire support means. It provides sufficient flexibility to accommodate the unexpected in the battle. Fully integrated fire support can result only when the FSCoord is an aggressive contributor to the commander's planning sequence and decisionmaking process.

☐ Fire Support Planning Principles

These principles guide the planning of fire support for the battle.

- ☐ Start planning early and plan continuously.
- ☐ Exploit all available targeting assets.
- ☐ Consider the use of all available fire support means.
- ☐ Select the most effective means.
- ☐ Provide adequate fire support.
- ☐ Avoid unnecessary duplication.
- ☐ Provide for flexibility.
- ☐ Provide for safeguarding and survival of friendly forces and installations.

This is how the principles are translated into actions:

- ☐ Start planning early and plan continuously. By starting his planning when the commander receives or assumes the mission and continuing through the termination of the mission, the FSCoord insures that fire support will be fully integrated into the battle plan and execution.
- ☐ Exploit all available targeting assets. The FSCoord must insure that target information from all sources available at his echelon is rapidly evaluated and routed to the appropriate fire support delivery agency.
- ☐ Consider the use of all available fire

support means. Each weapon system has different capabilities and limitations that the FSCoord considers. This means considering every available system and putting the best mix on the target.

- ☐ Select the most effective means. Based on target analysis, weapon characteristics, the mission, and the commander's guidance, the FSCoord recommends the most effective fire support means to attack targets.

☐ Provide adequate fire support. In assessing adequacy, the FSCoord and the commander visualize the battle from their echelon, and the FSCoord plans fire support against those targets that are of interest to the commander. Weighing the mission requirements against the logistical impact on the fire support system, the FSCoord recommends and the force commander approves the fire support allocation that will best accomplish the mission. The FSCoord will also recommend requests for *additional* fire support resources if necessary.

☐ Avoid unnecessary duplication. During planning, the FSCoord must resolve conflicts in fire support to preclude wasting resources. However, economy should not be employed to the detriment of good fire support, and a balance must be struck between the requirement to provide adequate fire support and the tendency to overkill.

☐ Provide for flexibility. This can be accomplished through assignment of missions, organization for combat, judicious allocation of assets, and carefully planned positioning of fire support means. The FSCoord and the commander must visualize the battle and anticipate changes.

☐ Provide for the safeguarding and survival of friendly forces and installations. The FSCoord and the commander must not only plan safe fires to protect friendly forces, they must also insure that all fires are mission-essential to enhance the survivability of the fire support means. An effective and responsive counterfire program is essential and must be planned.

**APPLICATION OF FIRE SUPPORT
PLANNING PRINCIPLES INSURES THE
FLEXIBILITY NECESSARY TO
ANTICIPATE AND FULFILL FIRE
SUPPORT REQUIREMENTS DURING
RAPIDLY CHANGING
COMBAT SITUATIONS.**

**PLANNING MUST BE GUIDED BY THE
COMMANDER'S PRIORITIES TO INSURE
THAT ENOUGH FIRE SUPPORT ASSETS
ARE AVAILABLE, WHEN AND WHERE
THEY ARE NEEDED, TO MEET THOSE
DEMANDS THAT ARE MOST
IMPORTANT TO HIS MISSION.**

Coordinating measures are recommended to the commander to allow greater fire support responsiveness.

These principles guide the commander and the FSCoord as they plan fire support for the battle. Fire support planning is much more than target planning and choosing the best weapon/ammunition combination for a target. Allocation, positioning, deceiving, surviving, surveying, and planning the use of intelligence assets are equally important. Good planning facilitates rapid change; it anticipates massing of fires, changes in the force mission, realistic movement times, resupply, target acquisition, and the replacement of entire units. In a word, fire planning is *flexible*.

☐ **Priorities for
Fire Support Application**

The vast array of targets anticipated on the battlefield will generate competing demands for fire support, demands that will probably exceed the capability of the system to respond to all requirements. To avoid an overload of the system, the commander establishes priorities on how he wants to use his fire support assets to meet those demands that are most important to his mission. He can express his priorities in the allocation of assets, positioning of fire support units, stated constraints to provide for future operations, and guidance on the attack of specific types of targets.

Targets are generally considered in respect to their potential danger to the mission, specifically those which

- ☐ *prevent* execution of the plan,
- ☐ *seriously interfere* with the plan,
- ☐ *can cause* serious interference later, or
- ☐ *cause limited* interference.

The priorities established by the commander are the guidelines by which the FSCoord manages the fire support planning and coordination process.

☐ **Guidelines for
Desired Effects on Targets**

Once the commander has set his target attack priorities he issues further guidance, with the advice of his FSCOORD, on which effects he desires to achieve on each type of target. This decision is based upon consideration of ammunition and delivery means available. The effects that the commander may require on a target are expressed as suppression, neutralization, or destruction and are discussed in the following matrix.

	SUPPRESS	NEUTRALIZE	DESTROY
Effect on the Target	Limits the ability of enemy <i>personnel</i> in the target area. HE-VT creates apprehension or surprise and causes tanks to button up. Smoke is used to blind or confuse. The effect usually lasts only so long as fires are continued.	Knocks the target out of the battle temporarily. Experience has shown that 10% or more casualties will neutralize a unit. The unit will become effective again when casualties are replaced and equipment repaired.	Puts the target out of action permanently. 30% or more casualties normally renders a unit permanently ineffective, depending on the type and discipline of the enemy force. Direct hits are required on hard materiel targets.
Target Location	Normally planned against likely, suspect, or inaccurately located enemy firing positions.	Located by accurate map inspection, by indirect fire adjustment, or by a target acquisition device.	Located by accurate map inspection, by indirect fire adjustment, or by a target acquisition device.
Assets Required	Small firing units (howitzer platoons, mortar sections) can frequently do the job. Low ammunition expenditures.	Varies according to type and size of target and weapons/ammunition used.	Also varies; however, destruction usually requires large expenditures from many units. Destruction of armored or dug-in targets with area-fire weapons (FA, mortars, NGF) is not economical.
Example	If you know generally where the fire is coming from, you can suppress a platoon of enemy infantry with Saggars by sustained fire from an FA platoon (2 tubes) firing HE and smoke.	If you have an accurate map location or adjust indirect fire on to the same platoon, you can, provided the enemy is not well dug in, □ Neutralize the platoon with 2 battery volleys of 155-mm ICM. □ Destroy the platoon with 7 battery or 2 battalion volleys of 155-mm ICM. Amounts of ammunition required to neutralize or destroy a given type of target can be determined using Joint Munitions Effects Manuals (JMEM) or graphical munitions effects tables (GMET).	

□ Categories of Fire Support Planning

The depth and complexity of fire support planning depends on how much time is available and the echelon at which the planning occurs. Planning for contingencies and planning at higher echelons is normally very detailed and is outlined in explicit planning documents. During battle at the lower echelons, planning is more spontaneous, and many of the actions that occur in response to a battle situation are established in SOP's and fragmentary (frag) orders. As a result, two types of fire support planning occur: *formal and informal*.

Formal Planning. Formal planning goes from *higher to lower*; it results from a higher commander allocating resources to the lower commanders and providing guidance for their use. If time permits, a *written operation order (OPORD)* may be prepared at brigade and higher levels. Maneuver commanders and FSCoord's must know what fire support is available, its capabilities, how to obtain it, and how maneuver and fire support are to be integrated. The FSCoord advises the commander on asset allocation for close support of maneuver, counterfire, air defense suppression, preparations, and other fire support programs. The FSCoord also advises on

- priority targeting requirements;
- the intelligence collection effort that supports targeting;
- the damage guidelines—when to suppress, neutralize, or destroy; and
- guidance for target acquisition agencies—where and when to look and what targets are important to the DS battalion or to the division artillery TOC.

At brigade and higher, formal planning normally results in a written *fire support plan* published in paragraph 3 of the OPORD.

OPORD 2-76

1. Situation
2. Mission
3. Execution
 - a. Concept of Operation
 - (1) Maneuver
 - (2) Fires
 - b. 1st Bde
 - c.
 - d.
 - e.
 - f. Fire Support
 - (1) FA
 - (2) CAS
 - (3) NGF
 - (4) Nuclear ..
 - (5) Chemical ..
 - (6) Fire Support
Coordinating
Instructions
4. Service Support
5. Command and Signal

FIRE SUPPORT PLAN

If necessary the fire support plan can be amplified by a fire support annex; however, this should be the exception rather than the rule.

Though formal and written, the plan is only a departure point and is kept simple and flexible. It includes the commander's guidance and specific instructions regarding integration of maneuver and fire support. It tells subordinate commanders how the commander will allocate fire support means to support maneuver elements, priorities, how to obtain support, limitations, and other items of interest to the commanders. It tells those involved with fire support their role in the battle plan, mission assignment, restrictions, and necessary coordinating instructions for counterfire, air defense suppression, and positioning. It establishes the direction of intelligence and target acquisition efforts and the desired damage guidelines (when to suppress, neutralize, or destroy).

The fire support plan includes a subparagraph for each fire support agency involved in the operation. The appropriate

representatives in the FSE prepare each subparagraph and then the FSCoord compiles all fire support subparagraphs into the fire support plan.

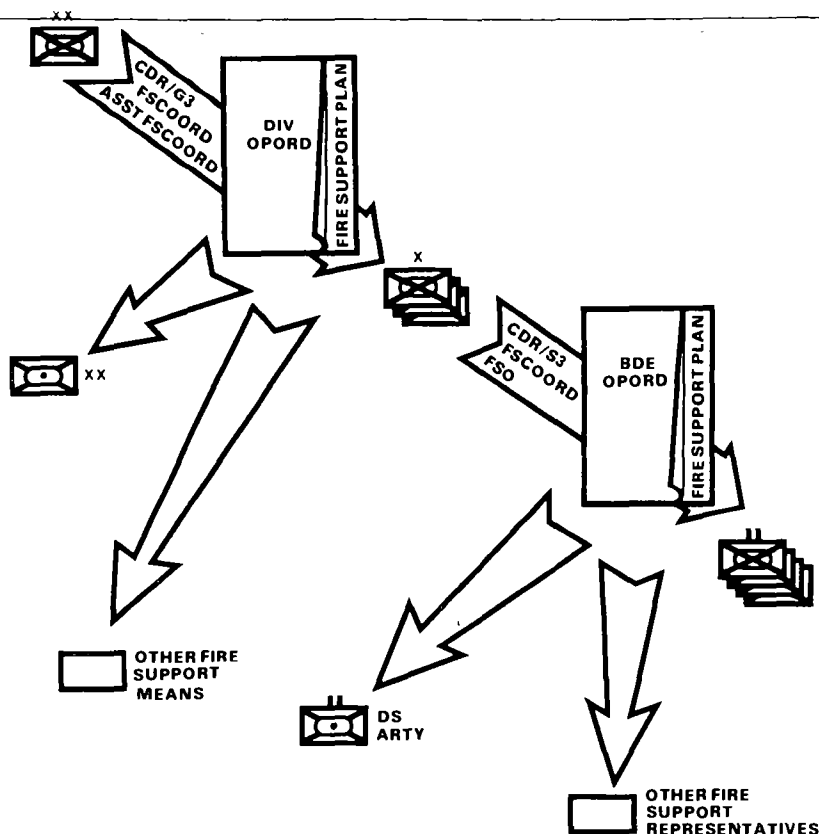
The fire support plan for a given headquarters will not be dependent on target input from subordinate elements. Instead, it will tell subordinate commanders what they are to do and what they need to know to accomplish their missions. If the division fire support plan includes a target list, it will list only those targets that the division commander decides are critical to division operations. Likewise, a target list in a brigade fire support plan will list only those targets the brigade commander decides are critical to the brigade operation.

The fire support plan does not include "how

to implement" instructions to individual fire support agencies (e.g., FA instructions to FA that green bag propellants will be fired at ranges less than 7,000 meters). Information peculiar to each fire support means should be addressed in SOP's or implementing instructions subsequent to receipt of the fire support plan. This formal fire support plan is disseminated from higher to lower as shown in figure 3-1.

The individual fire support agencies may publish a separate plan outlining how that agency will accomplish its portion of the fire support plan. Agency plans are distributed through their own channels with an information copy to the FSCoord. A sample fire support plan, fire support annex, and agency plans are at appendix I.

FIGURE 3-1. DISSEMINATION OF FIRE SUPPORT PLAN.

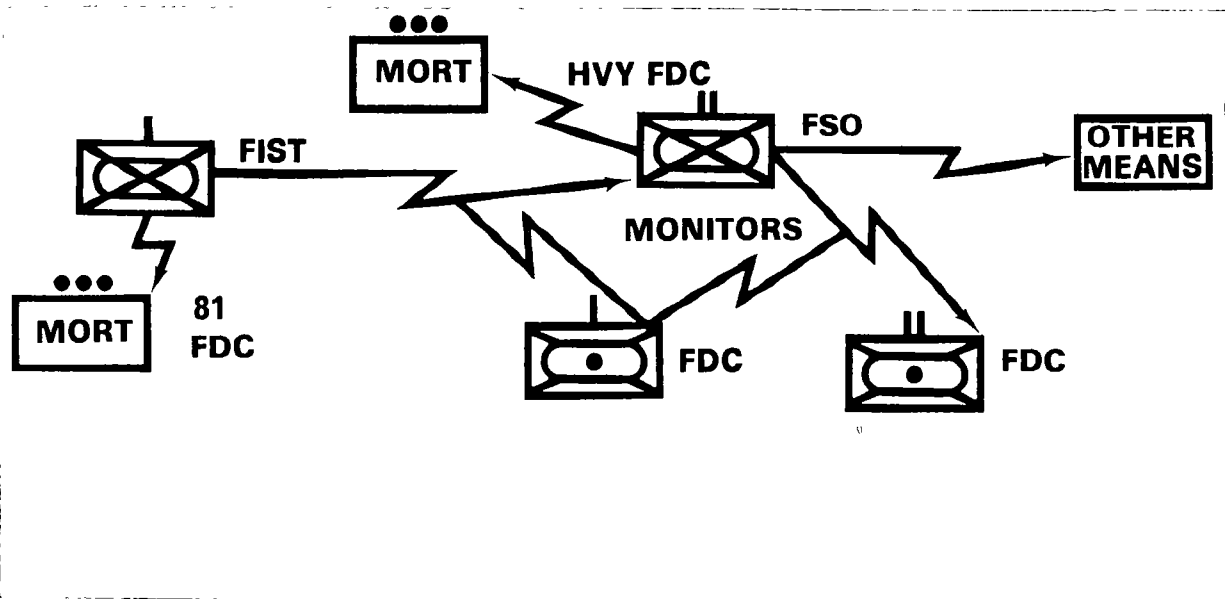


Informal Planning. Informal planning is more dynamic, not usually written, and continually changing because it reacts to rapidly changing combat situations. Like formal planning, informal planning facilitates the information exchange between fire support units and facilitates fire support tasking. This planning occurs at all levels when time and the situation preclude preparing formal plans. Informal fire support planning goes from lower to higher and happens primarily at the maneuver company (FIST) and battalion (FSO). It may be a FIST member calling in a target to be placed "on call" or an FSO requesting a planned target for his task force.

The FIST continually plans targets and insures that maneuver leaders can identify the targets and associate them with target numbers. These targets are sent to the company mortar fire direction center (FDC) or to the battalion FSO. The FSO resolves conflicts or duplication between units and passes the targets to the direct support (DS) battalion FDC, battalion heavy mortars, or other fire support means. The FSO notifies the FIST of all changes to his target list. The FIST and FSO advise commanders on the best fire support means for specific targets—mortars are better than FA; FA instead of CAS; or CAS instead of FA. Planning channels are shown in figure 3-2.

Fire support planning, whether formal or

FIGURE 3-2. INFORMAL PLANNING CHANNELS.



informal, is continuous and concurrent at all force levels. A complete discussion of the planning process is at appendix I. During the battle, planning is done concurrently with fire support coordination to implement the fire support plan on the battlefield.

3-5. Fire Support Coordination

Fire support coordination is the continuing process of *implementing* fire support planning and *managing* the fire support assets that support the maneuver force.

When talking about optimizing combat power, fire support planning falls in the "how to" category while fire support coordination falls in the "make it happen" category. The commander and the FSCOORD can weld maneuver and fire support together only through concerted coordination.

□ **Fire Support Coordination Principles**

Fire support planning and coordination are simultaneous actions, so while planning continues, the coordination of the plan—making it happen—begins. In the implementation of fire support, the commander and FSCOORD observe these coordination principles:

- Insure a continuing flow of targeting information.
- Consider use of all available fire support means.
- Use the lowest echelon capable of furnishing effective support.
- Use the most effective means.
- Furnish the type support requested.
- Avoid unnecessary duplication.
- Consider airspace coordination.
- Provide rapid coordination.
- Insure the continued safeguarding of friendly elements.

These coordination principles closely parallel the planning principles and, like them, aim for the best possible use of fire support. This is how the principles are translated into action.

Insure a continuing flow of targeting information. The FSCOORD must insure that the targeting information, including that available to the maneuver S2/G2 at his echelon, continues to flow into the fire support system.

Consider use of all available fire support means. The FSCOORD must *think total* assets and not limit the commander to a particular weapon system. As the battle develops, a vast array of targets will appear that require the variety of capabilities offered by the full spectrum of fire support means.

Use the lowest echelon capable of furnishing effective support. This provides economy of force and flexibility to the commander in the use of uncommitted assets. If mortars will do the job, do not use a battery of artillery or an airstrike—save those assets for use elsewhere.

Use the most effective means. Fire missions should be assigned to the agency that can provide the most effective fire support. The FSCOORD must consider the target, the responsiveness needed, and the capabilities of the weapon system. Sometimes it may be necessary to use a less effective means to temporarily fix or suppress a target until a more effective means can attack.

Furnish the type support requested. The requesting agency is normally in the best position to determine its immediate fire support needs. However, the commander's guidance, the established priorities, and the availability of assets will weigh heavily on the type support delivered.

Avoid unnecessary duplication. Fire support resources must not be wasted by unnecessary duplication of effort. As the focal point of fire support, the FSCOORD resolves duplication to insure that fire support is applied efficiently.

Consider airspace coordination. Ground and air fire support means must not become mutually interfering to the detriment of continuous support to the maneuver force. FM 100-42, *Airspace Management in Area of Operations*, discusses airspace management and the responsible agencies.

Provide rapid coordination. Procedures must be established and practiced to effect the rapid coordination required to attack targets quickly. The procedures and techniques used must provide for coordination at the lowest echelon required by the mission. The FSCOORD must be constantly alert for any fire support means, facility, procedure, or technique that slows the coordination of fire support. A primary means of effecting rapid coordination is

**FIRE SUPPORT COORDINATING
MEASURES ESTABLISH RULES AND
GUIDELINES FOR SELECTED AREAS OF
THE BATTLEFIELD FOR A GIVEN PERIOD
OF TIME. THEY ASSIST THE FSCORDIN:**

**FACILITATING RAPID COORDINATION
OF FIRE SUPPORT;
INSURING TROOP SAFETY;
MAXIMIZING APPLICATION OF
ALL FIRE SUPPORT MEANS; AND
COMPLEMENTING ADJACENT UNIT
OPERATIONS.**

through the carefully planned use of coordinating measures.

Insure the continued safeguarding of friendly elements. Coordinating measures must be continually evaluated and instituted, shifted, or eliminated as the situation requires. Similarly counterfire requirements and postures must be continually evaluated to insure that friendly elements have the best possible protection from enemy fire.

☐ **Fire Support
Coordination Measures**

The FSCORD coordinates all fire support impacting in his zone, or sector, including that requested by his supported unit. The FSCORD insures that fire will not jeopardize troop safety, interfere with other fire support means, or disrupt adjacent unit operations. This is handled in several ways:

Boundaries establish the operational zone or sector for a maneuver unit and the area in which the commander fires and maneuvers freely. They prohibit others from firing into that zone without first coordinating.

Coordinating measures, depending upon the type, designate portions of the battlefield where fires may be delivered without further coordination, as well as those areas in which some restriction has been placed on the delivery of fire. The FSCORD recommends them and the commander establishes them. They facilitate operations by establishing rules and guidelines for selected areas for a given period of time. They define the need for further coordination. There are two categories of coordinating measures: permissive and restrictive.

Permissive Measures. These measures are drawn in BLACK on overlays/maps. They are titled and indicate the establishing headquarters and the effective date/time group. Permissive measures permit engagement of targets beyond the line or into an area without further coordination.

Coordinated Fire Line (CFL) -- a line beyond which conventional surface fire support means (mortars, field artillery, and naval gunfire ships) may fire any time within the zone of the establishing headquarters without additional coordination. The purpose of CFL is to expedite attack of targets beyond the CFL.

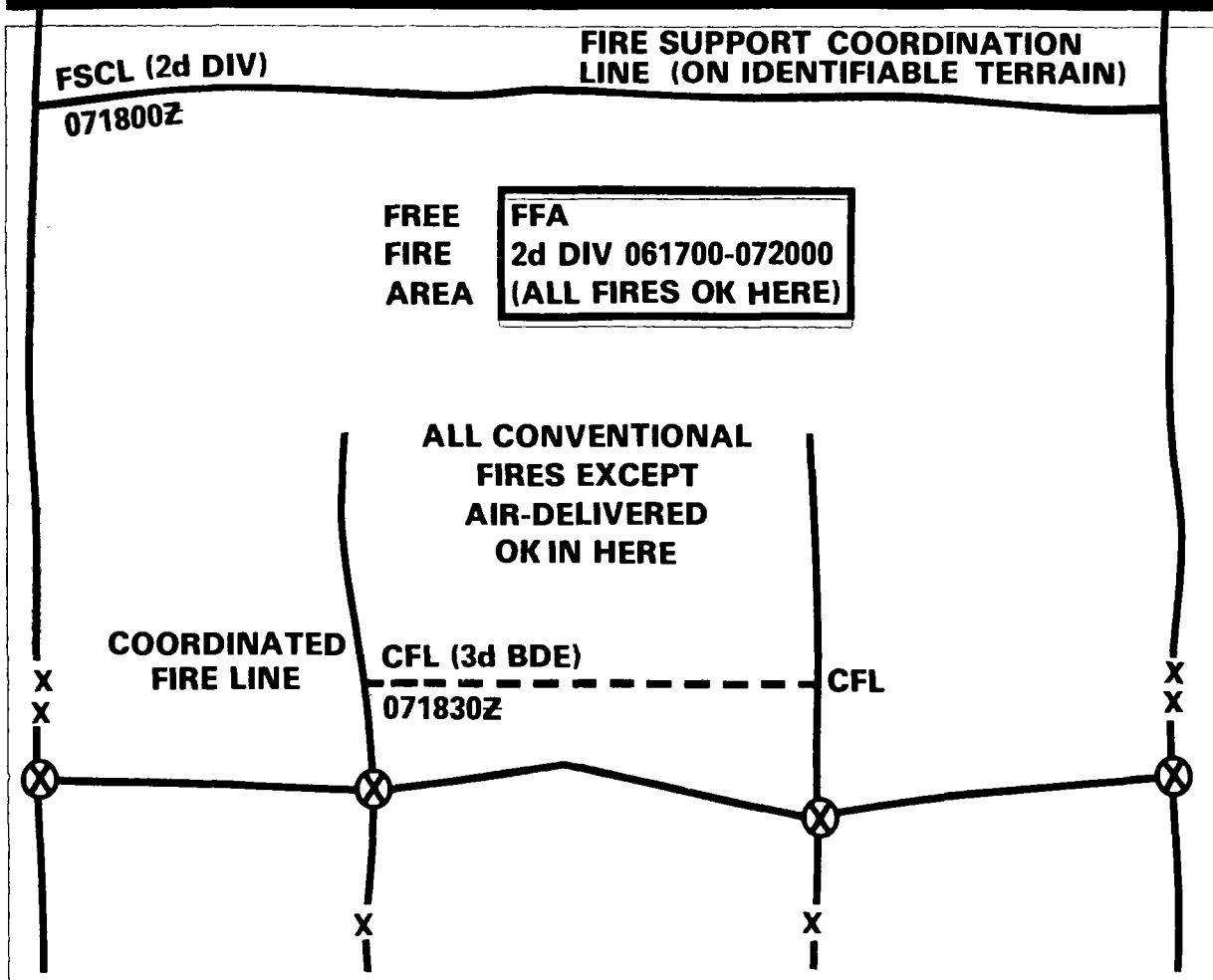
Fire Support Coordination Line (FSCL) -- a line beyond which all targets may be attacked by any weapon system (including aircraft and special weapons) without endangering friendly troops or requiring additional coordination with the

establishing headquarters. The purpose of the FSCL is to expedite the attack of targets beyond the fire support coordination line. No additional coordination is required provided that neither the fires nor their effects fall short of the FSCL.

Free Fire Area (FFA) -- a specific, designated area into which any weapons system may fire without additional coordination from the establishing headquarters. The purpose is to expedite fires.

Figure 3-3 shows how permissive measures are used.

FIGURE 3-3. PERMISSIVE COORDINATION MEASURES.



Restrictive Measures. These measures are drawn in RED. They are titled and indicate the establishing headquarters and the effective date/time group. Restrictive measures mean that fires, or the effects of fires, into an area or across a line must be coordinated with the establishing headquarters or the affected force on a mission-by-mission basis. These are the *restrictive measures*:

Restrictive Fire Line (RFL) -- a line established between converging friendly forces (one or both may be moving) that prohibits fires or effects from fires across the line without coordination with the affected force. The *purpose* of RFL is to prevent interference between converging friendly forces.

Restrictive Fire Area (RFA) -- an area in which specific restrictions are imposed and into which fires that exceed those restrictions will not be delivered without coordination with the establishing headquarters. The *purpose* of an RFA is to regulate fires into an area according to the stated restrictions.

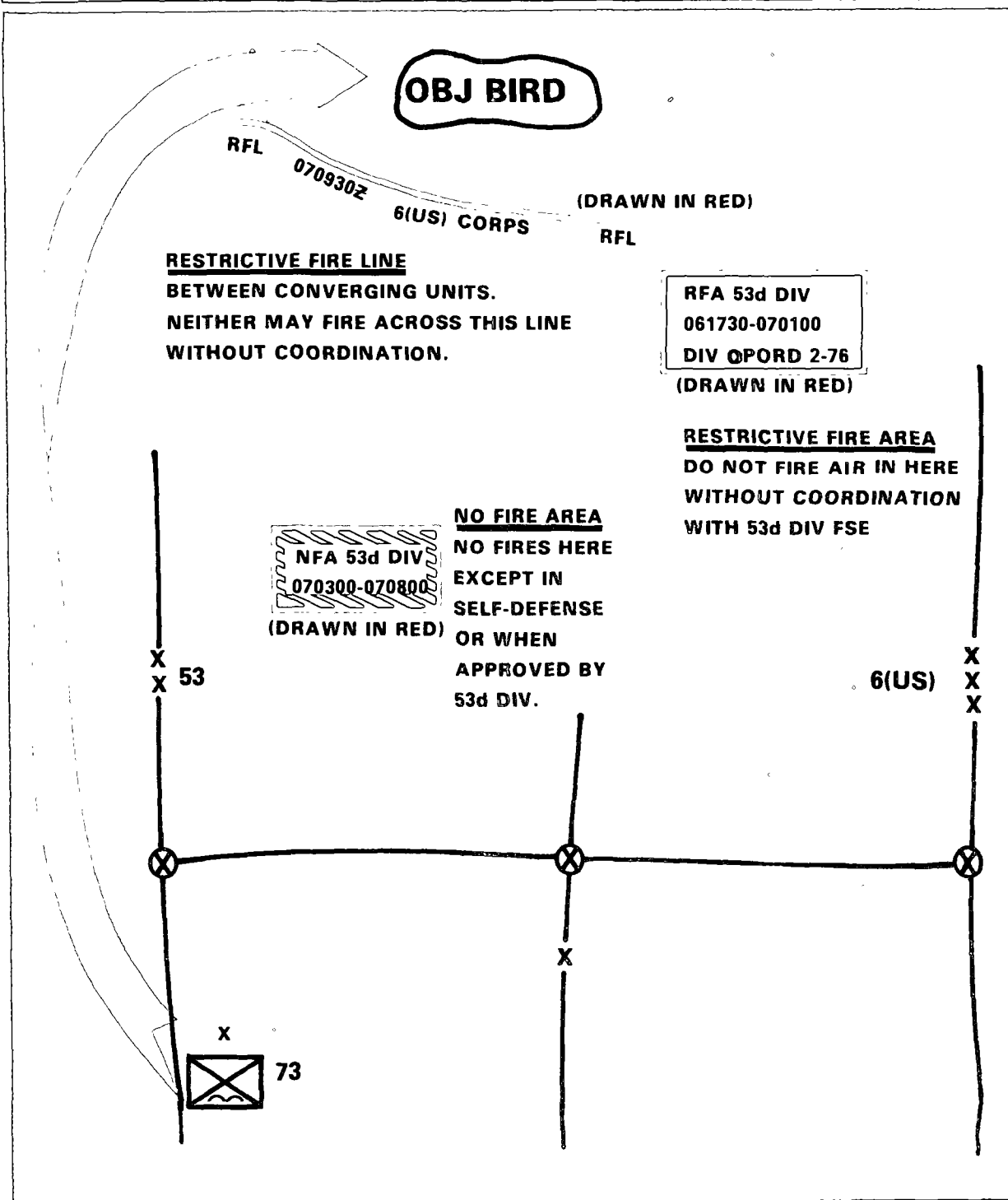
No-Fire Area (NFA) -- an area in which no fire or the effects of fires are allowed. Two exceptions include: (1) When establishing headquarters approves fires (temporarily) within the NFA on a mission basis; (2) When an enemy force within the NFA engages a friendly force, the commander may engage the enemy to *defend his force*. The *purpose* of the NFA is to prohibit all fires or their effects into an area without prior clearance.

Airspace Coordination Area (ACA) -- a block of airspace in the target area in which friendly aircraft are reasonably safe from friendly surface fires. It may occasionally be a formal measure (a three-dimensional "box in the sky"). More frequently, it will be *informal* ("keep the FA and NGF north of GREEN RIVER, CAS to the south"). See appendixes I and J for further details.

Figure 3-4 shows how selected restrictive measures are used.

**A COMPLETE DISCUSSION OF
THE FIRE SUPPORT COORDINATION
MEASURES IS AT
APPENDIXES H AND I.**

FIGURE 3-4. RESTRICTIVE COORDINATING MEASURES.

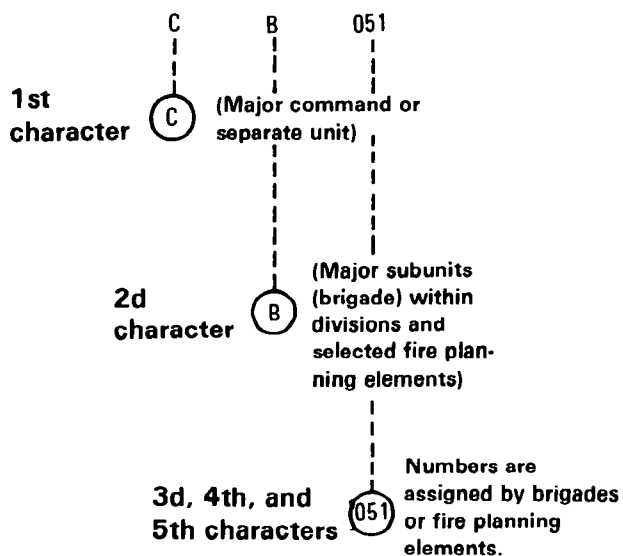


□ Target Numbering

A uniform target numbering system is used to provide fire supporters with a common means of designating targets on the battlefield. Target numbers may be assigned by FIST's, FSO's, FA FDC's/TOC's, or by division or corps FSE's. A target number identifies both the target and the unit that numbered it. The target number is an alphanumeric designator consisting of a

maximum of two letters and three numbers. The number of characters used will vary with the level at which the number is assigned and when the target is sent. Within a brigade only the three numeric characters are sent. Within a division but between brigades, div arty, and the division FSE, one letter and three numbers are used. Targets sent between divisions will consist of all five characters. (Letters I and O are not used to avoid confusion with numbers 1 and 0.)

For example, target number CB 051:



A-G	- Division in numerical order
H	- Armor cav regt
J-W	- Separate bde/regt
X	- Corps*

A-E	- Bde in numerical order
F-W	- As needed
Y	- Div arty TOC
Z	- Div and corps FSE

001-050	Bde cdr/FSO
051-200	1st Bn
201-350	2d Bn
351-500	3d Bn
501-650	4th Bn
651-800	5th Bn
801-999	DS FA bn

*Corps FA brigades and separate battalions are assigned letters XA-XX. See appendix H for additional information.

3-6. Target Acquisition for the Fire Support System

☐ Target-Producing Assets

The fire support system has many target-producing assets. Those dedicated assets directed toward a particular component of the fire support system—such as the FA target acquisition battery—will be discussed as a part of that subsystem.

The "grass roots" of the target acquisition effort is the FIST observer. These observers, deployed at company/team and platoon levels, acquire targets for the *entire* FS

system—not just field artillery. The FIST chief is the FSCoord at company level and he, with the company commander, decides when to call for FA, mortars, CAS, or NGF. The FIST is a valuable collector of target data. It observes the battlefield to detect, identify, and locate targets, and it establishes communications with the task force FSO, the company team, and FA and mortar FDC's as required. (See appendix G for a detailed discussion of the FIST.)

Moving up from company level in the maneuver chain, more and more targeting systems are encountered.

INTELLIGENCE ASSET AVAILABILITY.

	Battalion	Brigade	Division	Corps
Signal Intelligence (SIGINT)				
Communications Intelligence (COMINT)		☐	☐	☐
Electronic Intelligence (ELINT)		☐	☐	☐
Remote Sensors (REMS)	☐	☐	☐	
Ground Surveillance Radar (GSR)	☐	☐	☐	
Imagery				
Photo				☐
Infrared (IR)			☐	☐
Side-looking Airborne Radar (SLAR)			☐	☐
Reconnaissance Units	☐		☐	☐
Interrogation of Prisoners of War (IPW)		☐	☐	☐
General Aviation Sources		☐	☐	☐

All of these intelligence assets produce information that will greatly aid in fire support targeting, and all are available to the FSCoord. It is the FSCoord's responsibility at each of these levels to insure that all available targeting agencies are used.

At maneuver battalion level, for example, remote sensors (REMS) may be used in the intelligence collection effort. The battalion FSO must coordinate with the maneuver battalion S2 to insure that appropriate targeting information resulting from this collection effort is rapidly forwarded to the DS FA battalion for targeting and, where appropriate, for attack.

Similarly, the maneuver brigade FSO has a like responsibility with respect to target information available at the maneuver brigade.

At division (and separate brigade) a particularly important potential targeting asset is the EW company. These units have the capability to listen (intercept), locate (direction finding), and disrupt (jam and deceive) enemy radios and radars. By establishing an interface with the EW personnel, the FSCoord, at division for example, can insure that this valuable and effective targeting asset is used.

Most of the coordination between fire supporters and EW personnel will take place in the division main command post. Key individuals involved are:

- G3 and the assistant G3 (electronic warfare staff officer).
- G2 and senior tactical intelligence officer (or order of battle warrant officer) located in the special intelligence (SI) secure area.
- The assistant fire support coordinator (AFSCoord) in the fire support element (FSE) and his artillery intelligence officer (AIO).
- The division EW company commander.
- The officer in charge of the electronic warfare information and operations center (EWIOC).

The physical location of these personnel

and their staff relationships will vary somewhat from division to division; therefore, the procedures described here for coordinating matters of mutual interest to the FSCoord and G2 are provided as a guide.

□ Collection of Targeting Data

The first step in acquiring timely, accurate targets from EW assets is for the FSCoord to state to the G2 the need for targeting information.

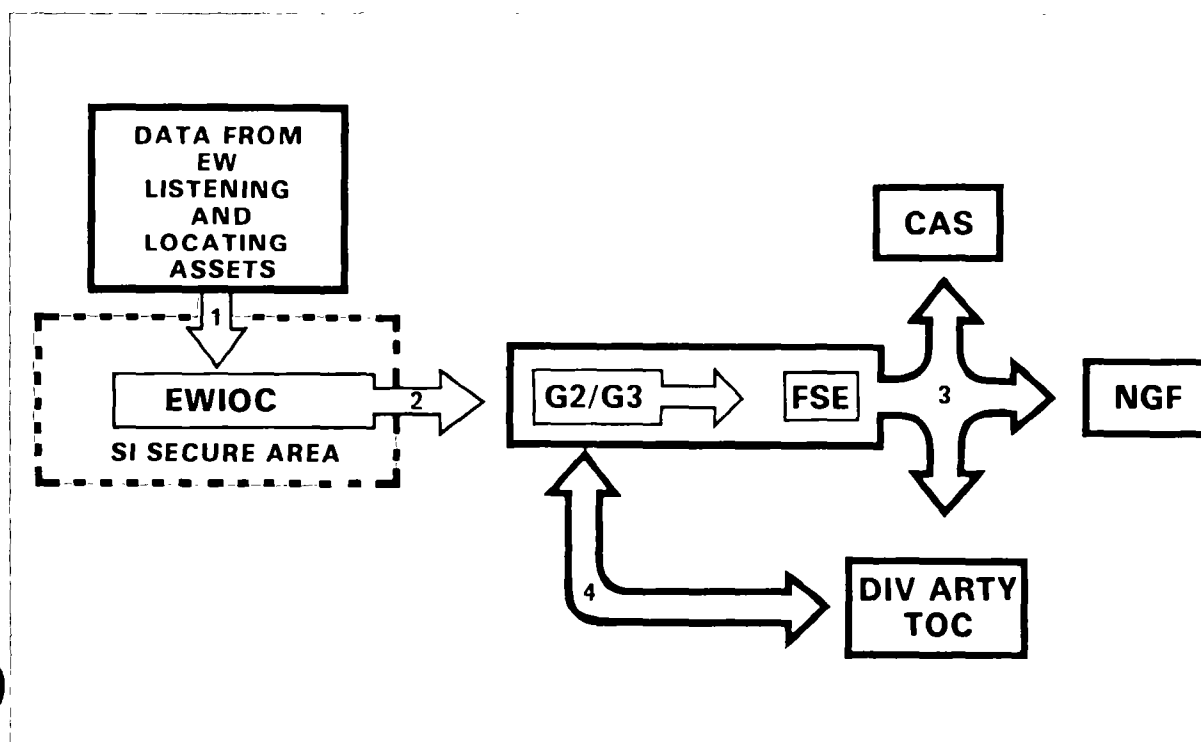
There may be conflicting requirements for EW collection assets from the FSCoord and other requestors. Therefore, priorities for the collection of information are determined by the commander. As intelligence needs become apparent, requests are passed to the G2 for collection action.

The following are examples of the FSCoord's specific intelligence needs:

- From where will the enemy employ nuclear weapons?
- Where are the enemy 122-mm multiple rocket launchers?
- Where are enemy countermortar/counterbattery radars located?
- Where are the enemy artillery command observation posts?

The intelligence collection requirements recommended by FSCoord will be considered by the G2 along with the requests for information submitted by other units and the division staff, based upon the division commander's specific intelligence requirements. Changes in the mission will, of course, cause the requirements for information to change. Figure 3-5 shows the normal flow of data from EW units to the fire support system.

If the FSCoord feels that this standard setup is not sufficiently responsive to insure effective target attack—and if the division commander approves—several steps may be taken to speed up the flow of certain types of targets to specific fire support delivery agencies. For details on these arrangements see Appendix A, *Target Acquisition*.

FIGURE 3-5. FLOW OF DATA, EW UNITS TO FIRE SUPPORT SYSTEM.

COMMUNICATIONS

1. EW COMM NET(S)
2. HAND CARRY OR HOTLINE
3. FS SYSTEM NET(S)
4. DIVISION INTELLIGENCE NET(S)

The following paragraphs describe each fire support asset and its contribution to the total fire support system. Each asset is discussed independently to provide continuity of thought and ease of reference.

3-7. Field Artillery

The mission of the field artillery is to destroy, neutralize, or suppress the enemy by cannon, rocket, and missile fire and to

integrate all supporting fires into combined arms operations.

Responsiveness, flexibility, and effectiveness dictate that field artillery is the maneuver commander's primary means of fire support. It has an acquisition capability, a variety of weapons and ammunition, and a responsive and accurate gunnery team. The command, control, and coordination element rapidly processes information to attack targets.

□ FA Target Acquisition

Weapons and ammunition are scarce, targets are plentiful, and the pace of battle is fast. Accordingly, effective *first-round fire* is critical. We are vulnerable to detection by sophisticated devices and attack by an imposing array of highly lethal weaponry. This makes early, deep location and attack of enemy targets critical. We must attack and destroy the enemy before the enemy attacks and destroys us.

The division artillery commander uses the division artillery's organic target acquisition assets and combines their data with all-source intelligence to produce targets. The target acquisition assets available to the division artillery commander are:

The Target Acquisition Battery (TAB). The TAB has five weapon-locating radars, one moving target-locating radar (MTLR), two sound bases, and eight flash OP's. It processes target information from the battery and other target intelligence agencies. The TAB processing section functions in the division artillery tactical operations center (TOC).

Aerial Observers (AO). Aerial observers are a lucrative source of combat information and intelligence. Division

artillery has 8 AO's and 14 organic observation aircraft. AO's are employed on a mission basis under division artillery control to support committed brigades or the armored cavalry squadron. They can be attached to, or placed under operational control of the FA battalions supporting the brigades. If they are under division artillery control in the zone of a committed unit, coordination is established with that unit. Target information is transmitted by the observer to that unit's direct support field artillery battalion or to the division artillery tactical operations center (TOC). The TOC designates a firing unit to attack the target and coordinates the fire. Helicopter pilots assigned to the cavalry squadron can call for and observe artillery fires.

The AO's are paired with the organic helicopter pilots as field artillery aerial observer (FAAO) teams. These teams increase the target-acquiring "eyes" of the division and facilitate comprehensive visual coverage of an expanded battlefield.

The div arty commander integrates the target information from these organic sources with the target information gleaned from the other intelligence agencies mentioned earlier (fig 3-6).

FIGURE 3-6. INTEGRATION OF TARGET INFORMATION.

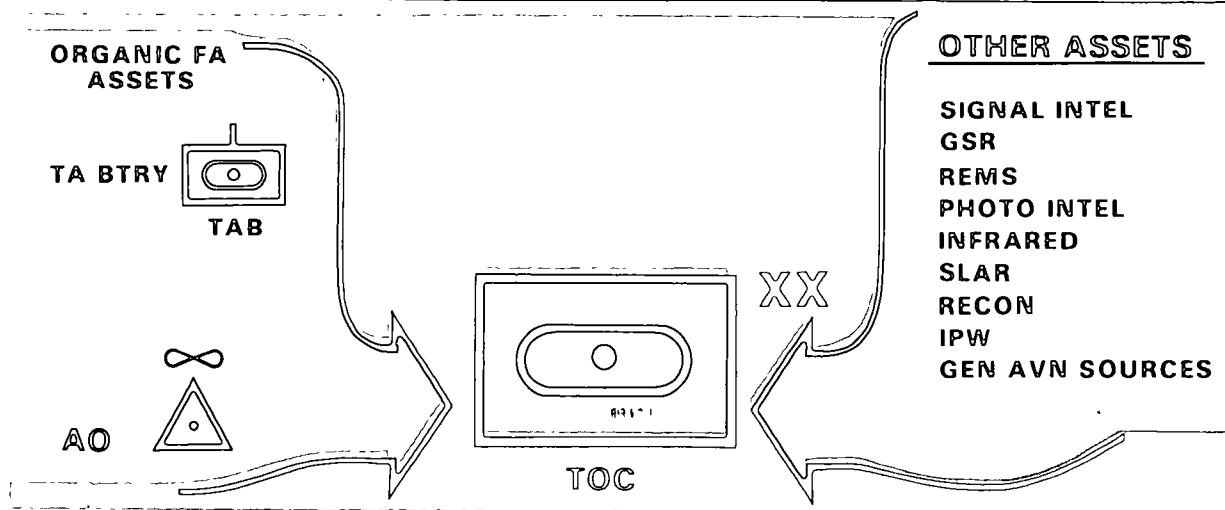
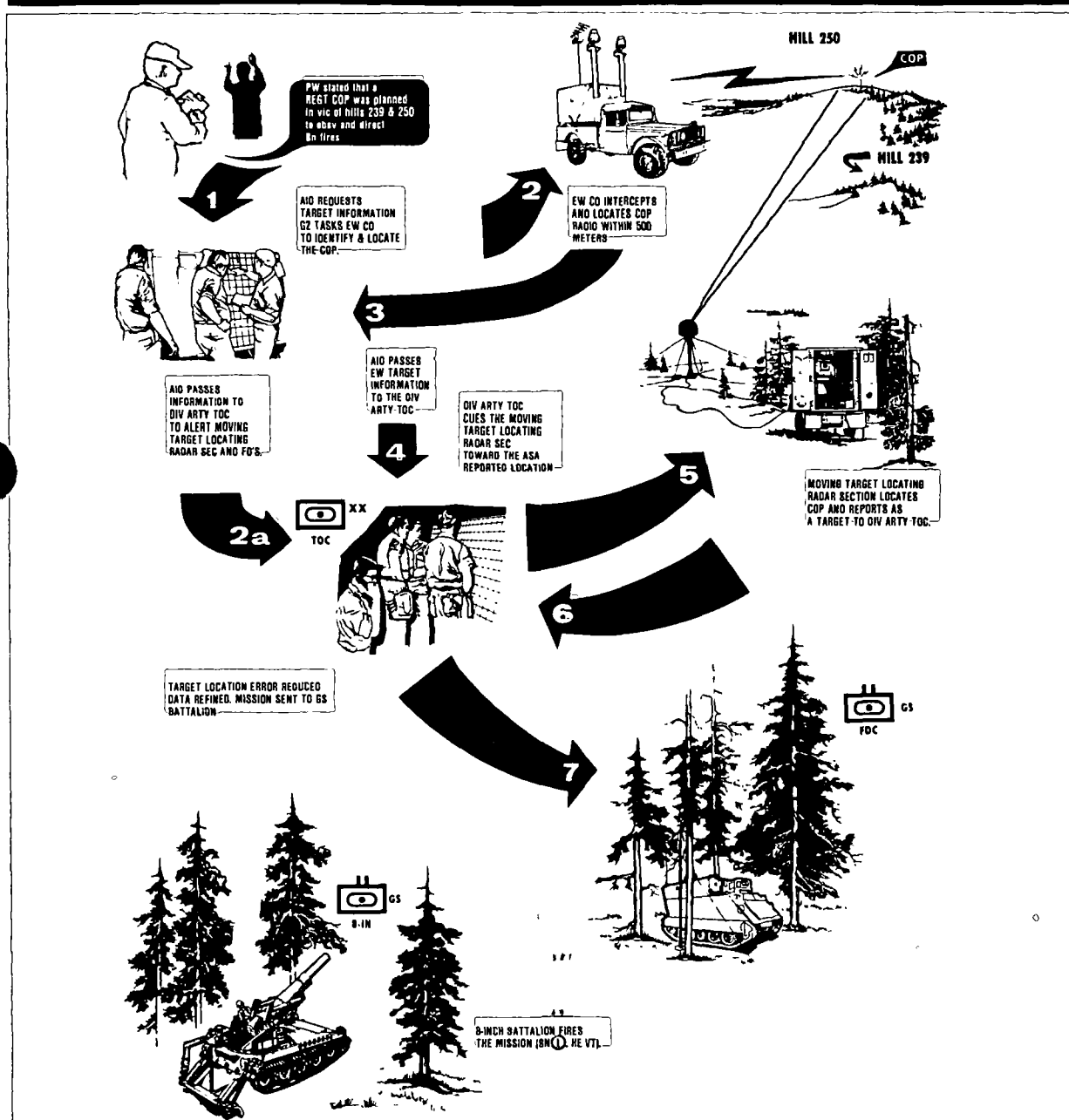


Figure 3-7 demonstrates how a target location might be developed by use of multiple sources of target information and intelligence. The target may be attacked based on a sole source of intelligence (IPW report) or at any other stage of development if

the need for immediate attack outweighs the advantages gained by refinement of target location.

Priorities for use of division intelligence agencies such as the EW company, of course, are established by the division commander.

FIGURE 3-7. DEVELOPMENT OF TARGET LOCATIONS.



FA ORGANIZATIONS AND WEAPONS - BY DIVISION TYPE

TYPE WPN	CANNON					MISSILE		
	105(T)	155(T)	155(SP)	8"(SP)	175(SP)	HJ*	Lance	Psg**
NO WPNS PER BN	18	18	18	12	12	4/6*	6	36
MECH/ ARM DIV			3 Bn	1 Bn		1 Bn*		
INF DIV	3 Bn	3 Btry ***		1 Btry ***		1 Bn*		
ABN DIV	3 Bn							
AMBL DIV	3 Bn	1 Bn						
SEP MECH/ ARMD BDE			1 Bn					
SEP INF/ ABN BDE	1 Bn							
ARMD CAV REG			3 Btry					
FA BDE	Up to six battalions. Variable mixture by caliber and mobility based on mission.					Up to six battalions		

*The Honest John is primarily a National Guard weapon. There are four launchers in divisional battalions and six in nondivisional units.

**The Pershing missile is a theater weapon.

***Composite battalion.

☐ FA Ammunition

A variety of FA ammunition is available and includes:

- ☐ high explosive (HE),
- ☐ high explosive antitank (HEAT),
- ☐ smoke,
- ☐ illumination (ILL),

- ☐ white phosphorus (WP),
- ☐ chemical,
- ☐ nuclear,
- ☐ beehive (flechette),
- ☐ improved conventional munitions (ICM)—antipersonnel (AP) and dual purpose (DP), and
- ☐ family of scatterable mines (FASCAM).

Various fuzing options increase munition lethality. Fire direction officers (FDO) select the best ammunition and fuze combination for each mission.

Ammunition Basic Loads. A basic load of ammunition is "that quantity of nonnuclear ammunition authorized to a unit for wartime purposes. The basic load provides the unit sufficient ammunition to initiate combat and sustain itself until resupplied." Factors in determining a basic load for *any* combat unit include:

- ☐ type and intensity of combat expected, and
- ☐ resupply capability of the unit support system.

When determining the basic load for *field artillery* battalions it is also necessary to take into consideration the ammunition transport capability of the unit. If a unit's basic load *exceeds* its ability to transport ammunition, then arrangements must be made to either prestock ammunition in new firing positions or to secure additional transportation assets to move the ammunition about the battlefield (see appendix B for further discussion of FA weapons and ammunitions).

☐ **Field Artillery Capabilities and Limitations**

The coordinated power of the FA system provides a significant capability for the commander, but there are limitations that must be understood and considered. First, the field artillery *capabilities* are to

- ☐ provide fire support under all conditions of weather and types of terrain;
- ☐ shift and mass fires rapidly without the requirement to displace;

- ☐ add depth to combat with long-range fires;
- ☐ fire a variety of conventional shell/fuze combinations;
- ☐ deliver nuclear and chemical fires;
- ☐ provide continuous support by judicious displacement; and
- ☐ be as mobile as the support unit.

The *limitations* of field artillery are:

- ☐ Limited self-defense capability against ground and air attack.
- ☐ Limited ability to destroy point targets without considerable ammunition expenditure.
- ☐ Firing signature makes it vulnerable to detection by enemy target acquisition assets.

☐ **FA Gunnery**

The FA gunnery system is a combination of the people, equipment, and procedures that produce firing data to attack targets. It consists of five essential elements:

- ☐ observers,
- ☐ the fire direction center,
- ☐ the firing battery,
- ☐ survey, and
- ☐ meteorology.

Observers—which include target acquisition devices—detect and report target locations, initiate calls for fire to the FDC, and adjust fires.

The FDC evaluates observer information, determines firing data, and transmits fire commands to the firing unit(s). FM's 6-40 and 6-40-5 discuss FA gunnery in detail.

The firing battery sets the firing data on weapons and fires the mission. (FM 6-50 discusses firing battery operations in detail.)

Survey determines precise weapon and target locations and provides weapon and target acquisition oriented data. Division artillery provides survey control to FA battalions for position, connecting, and target area surveys. Survey provides a common grid for:

- ☐ *massing* of fires,

**COMMAND OF FIELD ARTILLERY IS
INHERENT IN THE RELATIONSHIP
BETWEEN COMMANDERS OF
HEADQUARTERS WITH FIRE
SUPPORT RESPONSIBILITIES.**

**CONTROL OF FIELD ARTILLERY IS
DETERMINED BY ORGANIZATIONS FOR
COMBAT AND ASSIGNMENT OF
STANDARD AND NONSTANDARD
TACTICAL MISSIONS.**

- ☐ delivery of *surprise fires*,
- ☐ delivery of effective *unobserved fires*, and
- ☐ *transfer of target data* from one point to another.

Note. FM 6-2 discusses FA survey in detail.

Meteorology provides atmospheric data for ballistic corrections and for sound ranging. Division artillery meteorology assets provide ballistic messages, fallout prediction messages, sound-ranging messages, and air weather service meteorological data. (FM 6-15 discusses FA meteorological operations in detail.)

☐ **Field Artillery Command
and Control**

For this discussion, command refers to the various headquarters with fire support responsibilities and the relationship between maneuver and fire support commanders in those headquarters. Control is discussed in terms of standard and nonstandard tactical missions and organizations for combat.

Command and control of FA is accomplished at three major levels of maneuver command:

- ☐ corps,
- ☐ division, and
- ☐ separate brigade/armored cavalry regiment.

Field Artillery Command

Corps. FA units retained at corps are commanded by the corps field artillery officer (O-7). He serves in the dual capacity of corps special staff officer for fire support and commander of FA units not organic, assigned, or attached to subordinate maneuver units. Corps level artillery is normally organized into field artillery brigades tactically tailored with either cannon or missile battalions.

Command and control of Lance brigades is normally retained by corps. Cannon brigades with various calibers of FA battalions normally augment the artillery of the

divisions. This is done by attaching the FA brigade to a division or by giving the brigade a reinforcing mission.

Division Level. Command of field artillery is exercised by the division artillery (div arty) commander. Div arty provides field artillery for the division as a whole.

Separate Commands. FA units organic to separate brigades and the squadrons of the armored cavalry regiment (ACR) are commanded by the commanders of those maneuver units. When a separate brigade or an ACR is attached to a division, the organic FA units are normally attached to the div arty of the gaining division. This establishes a unique command and control relationship between the artillery commanders concerned. The separate unit commander has access to the same FA support as organic commanders.

FA Battalion Groups. Upon rare occasions and for short periods of time, it may be necessary for a commander to attach one FA battalion to another to form an FA battalion group. This is discussed in detail at appendix B.

The detailed composition of field artillery *batteries* is discussed in FM 6-50, *FA Cannon Battery*. FA battalions are also discussed in FM 6-21, *FA Cannon Battalions*, to be published. Also to be published is FM 6-22, *Division Artillery, FA Brigade, and FA Assigned to Corps*, which covers the organization and operations of division artillery, the field artillery brigade, and higher FA levels. The impact of the tactical fire direction system (TACFIRE) on command and control of the FA is discussed at appendix K.

Field Artillery Control. Tactical control of FA is accomplished through the organization of FA for combat. When organized for combat, each FA unit is placed within a tactical organization and assigned a tactical mission. Assigning a tactical mission tells the FA unit what its job is. The FSCOORD and the maneuver commander must understand the standard field artillery

tactical missions and the inherent responsibilities associated with each.

FA Tactical Missions. Standard and nonstandard tactical missions are recommended by the force artillery commander and assigned by the force commander. There are four standard tactical missions.

Direct support (DS) is the most demanding standard mission. It focuses an artillery unit's fires almost exclusively upon the supported maneuver element. A battalion with a DS mission:

- furnishes close and continuous fire support to a *single* maneuver element, normally a brigade;
- is habitually DS to the same maneuver element to facilitate combined arms teamwork; and
- is commanded by the force artillery commander.

Only during a movement to contact, and then on rare occasions, the DS mission may be extended by dedicating the fires of a battery to a lead company/team. FM 6-40-5, *Modern Battlefield Gunnery*, and chapter 4 and appendix B of this manual discuss the *dedicated battery*.

Reinforcing (R) is a tactical mission that causes one FA unit to augment the fires of *another FA unit* that cannot provide sufficient fires for the supported force. For example, one or more FA battalions can reinforce the fires of a DS FA battalion, and an FA brigade may reinforce the fires of a division artillery. A unit with a reinforcing mission:

- adds to the close and continuous fires of the reinforced unit, and
- is commanded by the force artillery commander.

General support-reinforcing (GSR) units support the entire force and augment the fires of designated force artillery units when not providing GS fires. GSR units are controlled by the force FA headquarters and are not committed to subordinate elements of the force.

General support (GS) units also support the entire force. They remain under the control of the force FA headquarters and are not

committed to any subordinate element of the force.

There are seven inherent responsibilities associated with each tactical mission.

An FA unit with a mission of—	Direct Support (DS)	Reinforcing (R)	General Support Reinforcing (GSR)	General Support (GS)
1. Answers calls for fire in priority from—	1. Supported unit. 2. Own observers.* 3. Force FA HQ.	1. Reinforced FA unit. 2. Own observers.* 3. Force FA HQ.	1. Force FA HQ. 2. Reinforced FA unit. 3. Own observers.*	1. Force FA HQ. 2. Own observers.*
2. Has as its zone of fire—	Zone of action of supported unit.	Zone of fire of reinforced FA unit.	Zone of action of supported unit to include zone of fire reinforced FA unit.	Zone of action of supported unit.
3. Furnishes fire support team (FIST)—	FIST to each maneuver company.**	No Requirement.	No Requirement.	No Requirement.
4. Furnishes FSO/LO—	FSO to each maneuver battalion and brigade of the supported unit.**	LO to reinforced FA unit HQ.	LO to reinforced FA unit HQ.	No Requirement.
5. Establishes communications with—	FIST chiefs, FSO's, and support maneuver unit HQ.	Reinforced FA unit HQ.	Reinforced FA unit HQ.	No Requirement.
6. Is positioned by—	DS artillery unit commander or as ordered by force FA HQ.	Reinforced FA unit or as ordered by force FA HQ.	Force FA HQ or reinforced FA unit if approved by force FA HQ.	Force FA HQ.
7. Has its fires planned by—	Develops own fire plans.	Reinforced FA unit HQ.	Force FA HQ.	Force FA HQ.

*Includes all target acquisition means not deployed w/supported unit (e.g., radar, AO, and survey parties).

**The DS battalion *trains* and *initially deploys* one FSO team with each maneuver battalion and one FIST with each maneuver company in the supported brigade. After deployment, FIST and FSO teams will *remain* with the supported maneuver unit throughout the conflict.

When a standard tactical mission will not do the job for the commander, a nonstandard tactical mission is assigned. This is done by:

- assigning a standard mission with explicit changes, or
- issuing explicit instructions for each of the seven inherent responsibilities.

Examples of Nonstandard Missions

1-42 FA: R 1-41 FA—Div arty will approve positioning.

196 FA Bde: GSR 20th Mech Inf Div Arty—Do not reinforce 20th Div Arty with more than 30 percent of controlled supply rate (CSR).

1-43 FA Bn: Augment the fires of 2-3 FA.

(1) Answer calls for fire in priority from 2-3 FA, 2-12 Cav, and Div Arty.

(2) Zone of fire to be assigned by division artillery.

(3) No FIST requirement.

(4) Establish liaison with 2-3 FA.

(5) Establish communications with 2-3 FA and 2-12 Cav.

(6) Division artillery will position.

(7) Division artillery will plan fires.

Organizing for Combat. The division artillery commander recommends the FA organization for combat to the division commander. Both read the battlefield together and decide what assets are kept at division and which are given to the brigades. This allocation is flexible and is changed as required by the battle situation. The division commander continually balances the requirement for close support and counterfire. Field artillery must be flexibly organized for quick reactions to changing requirements.

Fundamentals of Organizing for Combat. Assets are provided for close, continuous, and responsive support to the maneuver brigades. Some assets must also be responsive to division for counterfire, targets beyond the brigade zones, and interdiction. The division

commander must influence the fight at critical times, and he needs immediately responsive field artillery to do it. The fundamentals of FA organization for combat guide the commander in distributing his assets. These fundamentals are:

- Use maximum feasible centralized control.
- Provide adequate support for committed maneuver units.
- Weight the main attack or the most vulnerable area.
- Facilitate future operations.
- Provide immediately available support so the commander can influence the action.

Use maximum feasible centralized control. Field artillery is most effective when control is centralized at the highest level that can maximize its capabilities and meet mission requirements. Centralized control permits flexible employment and effective support to each command element and the total force. The degree of centralized control varies with each tactical situation, but the following are general guidelines:

- Use a high degree of centralized control in the defense. The enemy has the initiative, and it is difficult to predict when and where he will strike. Accordingly, the commander uses more centralized FA control to influence the action where it may develop.
- Use less centralized control in the offense. The supported force has the initiative, and the close combat units need flexibility to retain the initiative and maintain the attack momentum. Subordinate field artillery commanders also need flexibility—less centralized control—to act responsively and focus on fire support for the close combat elements.

Centralized control is attained by:

- assigning more GS and GSR missions and fewer DS and R.
- assigning nonstandard missions that retain positioning authority and ammunition allocations.

FA units are not normally attached to maneuver units unless distance,

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BATTLE SITUATION.**

communications, or control problems require it. Attachment changes the command structure, and the FA commander's capability to meet the force commander's requirements is reduced.

Provide adequate support for committed units. An FA battalion is most responsive when in direct support of a committed brigade. Only one FA unit will be DS to a maneuver unit. More firepower is provided when other field artillery units are reinforcing or general support-reinforcing to the direct support battalion. Additional support from GS units can be provided by positioning them and assigning directions of fire.

Weight the main attack and strengthen the most vulnerable area. In the offense, the main attack is weighted. In the defense, weight is given to covering forces first then to the most vulnerable part of the main battle area. Weighting is accomplished by:

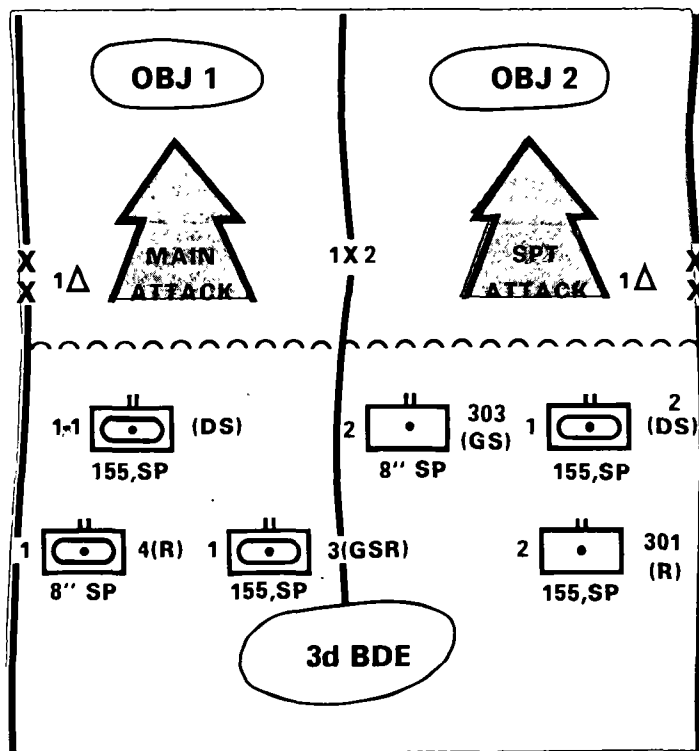
- Assigning reinforcing or general support-reinforcing missions to provide immediately responsive fires for the forces in contact.
- Positioning GS FA units and assigning a direction of fire that concentrates their fires in the critical sector.
- Allocating more ammunition to increase fire support.

Facilitate future operations. This fundamental is implemented by assigning tactical missions, positioning, and allocating ammunition. Its purpose is to counteract unforeseen circumstances and insure a smooth transition between operational phases. Assigning an on-order mission allows a unit to anticipate future fire support needs.

Provide immediately available support so the commander can influence the action. The force artillery commander must retain enough immediately available fire support to decisively influence the action. These are general support or general support-reinforcing units. They are responsive to the force commander because their priority of fires is to force artillery headquarters.

Example of Organization for Combat

Situation: The 1st Armored Division is attacking to the north with the 1st Brigade on the left, 2d Brigade on the right, and 3d Brigade in reserve. 1st Brigade is making the main attack to seize Objective 1 in zone. Both brigades are in contact; the lightest resistance is in 1st Brigade zone. The 3d Brigade is prepared for commitment in 1st Brigade zone to continue the attack. Corps has attached one battalion of 155-mm howitzers (SP) and one battalion of 8-inch howitzers (SP) to the division. The artillery available to the division is:



1st Bn (155-mm How, SP), 1st FA
 1st Bn (155-mm How, SP), 2d FA
 1st Bn (155-mm How, SP), 3d FA
 1st Bn (8-in, SP), 4th FA
 2d Bn (155-mm How, SP),

301st FA (corps unit)
 2d Bn (8-in, SP), 303d FA (corps unit)

Organization for Combat

1-1 FA: DS 1st Bde
 1-2 FA: DS 2d Bde
 1-3 FA: GSR 1-2 FA (Do not

exceed 30% of CSR in reinforcing 1-1 FA); o/o DS 3d Bde
 1-4 FA: R 1-1 FA; o/o R 1-3 FA
 2-301 FA: R 1-2 FA
 2-303 FA: GS

APPLYING THE FUNDAMENTALS

Providing Maximum Feasible Centralized Control This is an offensive situation so less centralization is desired. Of the six battalions, two are DS, two are R, one is GSR, and one is GS. This is a reasonable control balance.

Providing Adequate Support for Committed Units The minimum support of one DS battalion is provided for each

committed brigade. The brigade in the main attack also has a reinforcing battalion and second priority fires from a third battalion. The brigade in the supporting attack also has a reinforcing battalion. This organization provides sufficient support to start the battle.

Weight the Main Attack Support was weighted so that the 1-1 FA is DS to 1st Bde; 1-4 FA reinforces 1-1 FA; and 1-3 FA is GSR to 1-1 FA. 2-303 FA can be positioned to provide additional weight.

The 1-3 FA is GSR to 1-1 FA rather than reinforcing. It can assume the on-order mission of DS to 3d Brigade quickly. Also the mission was modified so that enough ammunition is available for the on-order mission. On-order missions were given to 1-3 FA and 1-4 FA to plan the orderly transition to a new situation.

The force commander has first priority fires from the 1-3 and 2-303 FA because they are GSR and GS. He has responsive artillery immediately available. These same fundamentals apply to the defense. Chapter 5, *Defense*, illustrates their use in the covering force and main battle area.

In the example case, there was no FA brigade available to augment the fires of the division artillery. When an FA brigade is available the corps commander will normally either attach it to a division or give it the mission of GSR or reinforcing a division artillery. See appendix B for further discussion.

□ FA in Counterfire

The tactical missions discussed above provide the channels for the FA to conduct counterfire operations, which are the responsibility of the division artillery tactical operation center (TOC). Based on guidance from the division commander, the division artillery commander may initiate counterfire programs against all or part of the enemy's indirect fire system. When such programs are fired, priority of fire may be to counterfire and a considerable portion of the available FA assets would engage counterfire targets. Brigade commanders may also request the division artillery TOC to initiate counterfire programs. The allocation of FA resources for counterfire programs represents the employment of a sizable amount of the division's combat power and will be an important command decision. Counterfire programs are appropriate under the following situations.

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In the Offense

- As part of a preparation preceding a brigade or division coordinated attack. The enemy's indirect fire systems are engaged during the first phase of the preparation and, time and ammunition permitting, provisions are made to maintain attack of these targets throughout the preparation.
- During the conduct of the attack when the enemy's indirect fires are prohibiting mission accomplishment or causing unacceptable damage/casualties. Countersuppression programs can be fired on the enemy's guns.
- During the consolidation of the objective, to prevent the enemy from executing a counterattack, counterpreparation fires can be fired. The enemy's fire support systems are included in the first phase of the counterpreparation.
- Suppression of enemy air defense (SEAD) fires to facilitate USAF and Army air operations.

In the Defense

- When an enemy attack is imminent. Counterpreparation fires can be executed and countersuppression programs as noted above can be fired.
- When the enemy initiates a barrage prior to an attack. Countersuppression programs should be fired.
- During an enemy attack when indirect fires are significantly reducing the effectiveness of our direct fire means. Countersuppression programs should be fired.
- SEAD fires to facilitate USAF and Army air operations.

By firing suppression and countersuppression programs, we keep the enemy's guns off our antitank systems and our guns so the FA can continue to support the battle. When the fight at the FEBA gets intense, priority of fires normally will switch to the FEBA. The decisionmaker as to where priorities of fire will go is the division commander, and the div arty commander will execute counterfire and/or close support fires.

Maneuver and FA units request counterfire through normal fire support/fire direction channels. Other combat support and combat service support units supporting maneuver units can request counterfire through the fire support element of the maneuver units. Other support units can request counterfire through their command channels.

The request for counterfire is sent to the div arty TOC and should be encoded using authorized brevity codes or, if possible, be sent by secure voice equipment to prevent the enemy from learning the effectiveness of his fires.

The div arty TOC will immediately respond to the counterfire request with FA fires based on guidance from the division commander concerning priority of fires, ammunition constraints, and survivability of our artillery. Simultaneously, the div arty TOC may also request jamming and close air support, as appropriate.

3-8. Mortars

Mortars are organic to maneuver companies (except tank companies) and

battalions. They are high-angle, relatively short-range, area fire weapons, well suited for maneuver close support. Mortars can provide a heavy volume of responsive, accurate, and sustained fire. Mortars are ideal weapons for attacking targets on reverse slopes, in narrow gullies, ditches, and other areas that are difficult to reach with low-angle fires.

Mortars are especially effective for smoke and illumination missions. Mortars can provide excellent initial smoke coverage with WP ammunition because of their high rate of fire. Mortars can provide immediate illumination within the company or task force area. Commanders should always consider using mortars for smoke and illumination missions.

☐ Mortar Target Acquisition

Mortar targets are acquired by FIST observers or any other personnel who observe the battle. Calls for fire are sent to the mortar FDC.

☐ Mortar Weapons

Mortars are available as shown below.

CO UNIT	MORTARS			BN TOTAL
	107-mm	81-mm	60-mm*	
Inf Co		3	*	9
Inf Cbt Spt Co	4			4
Mech Co		3		9
Mech Cbt Spt Co	4			4
Abn Co		3		9
Abn Cbt Spt Co	4			4
Ambl Co		3		9
Ambl Cbt Spt Co		4		4
Armor Co				
Armor Cbt Spt Co	4			4
Armd Cav Trp	3			9
Ranger Co			2*	6

**A new lightweight company mortar (60-mm) is in development. It is planned for issue to all non-mechanized infantry on the basis of three per infantry company. At the same time, all 107-mm mortars will be replaced by improved 81-mm mortars on a one-for-one basis.*

Mortars are capable of:

- ☐ providing immediate smoke and illumination;
- ☐ suppressing or destroying area or point targets;
- ☐ providing very rapid rates of fire to build up fire superiority;
- ☐ attacking reverse slope or defilade targets; and
- ☐ providing chemical fires with 107-mm mortars.

Mortar fires are most effective against troops in the open, weapons positions with light or no overhead cover, supply and ammunition dumps, and assembly areas.

Mortars are limited by:

- ☐ relatively short range compared to FA;
- ☐ less accuracy in high winds;
- ☐ easier detection by enemy radar due to high angle of fire and long projectile flight time; and
- ☐ ammunition carrying capability that restricts prolonged periods of heavy firing.

☐ **The Mortar Gunnery Team**

This team consists of observers (FIST), FDC's, and the mortar squads or sections. FM's 23-91 and 23-92 discuss mortar gunnery in detail.

☐ **Mortar Command and Control**

Mortars are organic to infantry rifle companies, infantry and armor combat support companies, and armored cavalry platoons.

Their unit commanders exercise command and control. Technical fire control is done in the mortar FDC. The FIST observer sends fire requests directly to the mortar FDC, which computes and transmits firing data to the mortar sections.

☐ **Tactical Missions**

Mortars are normally assigned a GS mission to support the force as a whole. In rare situations, they may be assigned a DS mission to one element of the force or may be attached to an element of the force.

With the normal GS mission, mortars are positioned where they can best support the main attack (in the offense) or cover the most probable enemy avenue of approach (in the defense). The commander can also weight a supported platoon or company by designating "priority of fires" to that element. The GS mission provides the most flexibility and capability to mass fires.

Occasionally, battalion mortars may be assigned a DS mission and provide fires to a designated company of the force. This is most likely when additional FA is available to the battalion and mortar support can be further decentralized. When not firing for its supported unit, a DS mortar element may fire for other force elements.

During movement operations, such as airborne or airmobile assaults, the commander may attach the mortars to a subordinate element during the early stages of the assault. The commander to whom the mortars are attached usually assigns the mortars a GS mission. Centralized control is reestablished as soon as possible and attachment then ceases.

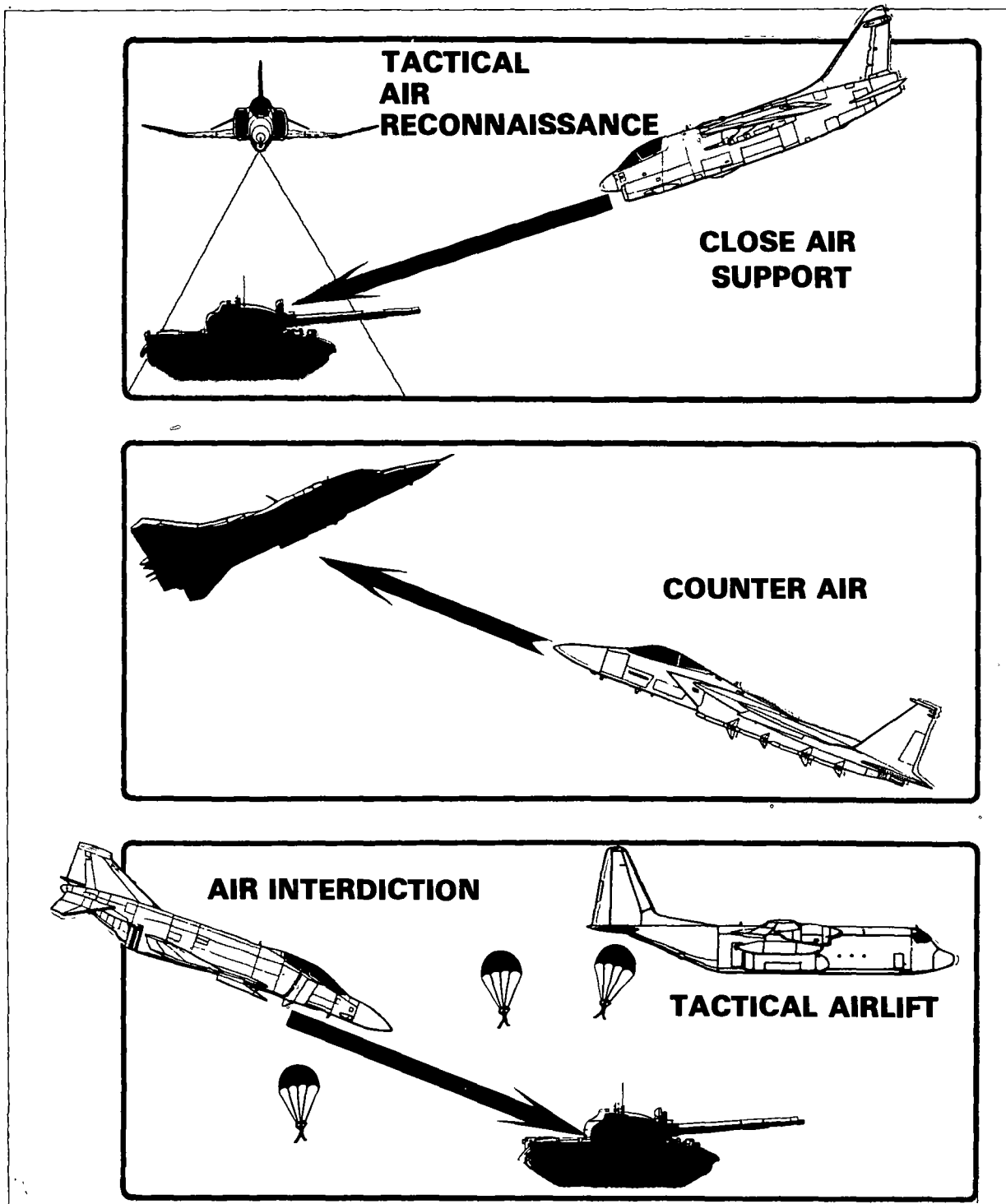
More details on mortars and available mortar ammunition are in appendix C.

3-9. Close Air Support

☐ **Combat Roles of Tactical Air Support**

Tactical air forces provide the US Army support in five major areas (fig 3-8). Of these roles, the FSCOORD has a major interest in two. His *most* important interest is in CAS—"Air action against hostile targets in close proximity to friendly forces, and which require detailed integration of each air mission with the fire and maneuver of these forces." The FSCOORD also has an interest in air interdiction missions. These missions are flown to delay the enemy's military potential before it can be brought to bear effectively against friendly forces at such

FIGURE 3-8. TACTICAL AIR SUPPORT.



distances that detailed integration of each air mission with the fire and maneuver of friendly forces is not required. Likely targets include enemy follow-on echelon forces that have not yet closed with friendly forces. The goal here is to insure efficient attack to destroy or neutralize these forces *before* they can be employed against friendly elements. CAS is normally planned short of the FSCL and air interdiction is planned beyond the FSCL. During actual operations, however, the FSCL is not a clear-cut dividing line. (See appendix D for further discussion on this point.)

☐ CAS Target Acquisition

Forward air controllers and the pilots of attack aircraft are capable of target acquisition as well as control/attack of Army-acquired targets. FSCoord's and ALO's must work together closely to insure that USAF-acquired targets *not* suitable for air attack are attacked by other means if appropriate.

☐ CAS Weapons and Ammunition

The primary CAS aircraft are the A7, A10, and F4. These aircraft deliver various ordnance mixes that will destroy a wide target spectrum. This includes rockets, cluster bomb units (CBU), general purpose (GP) bombs, napalm, guided missiles, 20-mm and 30-mm cannon, precision guided munitions (PGM), and tactical nuclear weapons.

As with other fire support means, CAS has capabilities and limitations.

Capabilities

- ☐ High speed and long range
- ☐ Versatile weapon/ammunition mixes
- ☐ Accurate delivery
- ☐ Excellent air-ground communications

Limitations

- ☐ Scarcity of resources
- ☐ Delivery restrictions caused by limited visibility and weather
- ☐ Flight restrictions may be imposed by enemy air defense
- ☐ Delayed response and short stay times

Additional discussion of CAS weapons/ammunition is at appendix D.

☐ The CAS Delivery Team

The team consists of tactical air control parties (TACP), FIST's, FSO's, the direct air support center (DASC), and tactical aircraft. The mechanics of delivering CAS ordnance involves an exchange of technical and tactical information between the pilot, TACP personnel (especially the forward air controller—Ground (GFAC) or Air (AFAC)), FIST, FSO, and maneuver personnel. This is a fast paced operation that insures the pilot has the right target, that he is vectored to avoid heavy air defenses, and that the attack is coordinated with other fire support and maneuver fires to get maximum effect.

☐ CAS Command and Control

Command of CAS. Command of CAS is outside the Army chain and is exercised by Air Force, Navy, Marine, or allied air commanders through the tactical air control center (TACC) at the air arm headquarters. Command authority is delegated to direct air support centers (DASC)—at corps tactical operations centers—that can honor requests for close air support for sorties allocated to the corps by higher Army headquarters.

The tactical air command *allocates* aircraft sorties to support Army operations. The number of sorties allocated is a function of Army priorities; the operational aircraft available; and the requirements for the air war, air interdiction, and CAS. The sorties allocated for CAS are *distributed* to support the corps or divisions whose commanders may further distribute some sorties or retain all sorties under their control. Normally, distribution is dictated by the situation

(centralized control for the defense; decentralized for the offense) and the sorties distributed from higher headquarters. A commander must be careful not to fragment his airpower and lose the effects of massive strikes.

Operationally, it is more effective to use CAS sorties on *preplanned* targets. However, tactical necessity often demands sorties against *immediate*, unforeseen targets. Sorties engaging a target can be diverted to targets with a higher priority.

3-10. Naval Gunfire (NGF)

NGF support provides a significant fire support capability. It is a long range, rapid fire system; and ships can be repositioned to provide support as the battle changes. Advisers representing supporting ships are available at all levels to facilitate NGF support.

☐ NGF Target Acquisition

NGF targets are acquired by maneuver and fire support personnel and their acquisition assets. The naval gunfire spotter team with the battalion task force also acquires targets, calls for, and adjusts fires.

☐ NGF Weapons and Ammunition

NGF weapons include 8-inch, 6-inch, and 5-inch guns. (For additional information on NGF weapons/ammunitions, see appendix E.)

NGF capabilities are mobility, accuracy, weapon/ammunition variety, high firing rate, high muzzle velocity, and narrow deflection spreads.

NGF limitations are flat trajectory, range dispersion, hydrography limitations, changing gun-target line, Army-Navy communication interface, and vulnerability to enemy air/naval counteraction.

☐ The NGF Gunnery Team

The NGF gunnery team is NGF, spotters,

the shipboard gunfire control center, and the firing batteries on gunfire support ships. NGF gunnery, like CAS, involves technical and procedural considerations that require close coordination with Army fire support and maneuver users.

☐ NGF Command and Control

Command of NGF. Command of NGF assets rests with the Navy. The naval commander is assisted by the naval liaison representatives located with supported ground forces.

Control of NGF. The naval commander controls NGF support through his air/naval gunfire liaison company (ANGLICO) representatives with maneuver forces and supporting ships. At each battalion task force, there is a shore fire control party that has a naval gunfire spotter team to direct NGF. The naval gunfire spotter positions himself in a supported company area to direct NGF. A FIST observer can adjust NGF also. However, they must relay commands to the ship through the NGF liaison officer (NGLO) at the battalion task force because of incompatible communications.

The Navy fire support group commander assigns tactical missions to NGF support ships based on the division commander's needs. The division commander, advised by his FSCOORD and division NGFO, recommends the best mission to the Navy fire support group commander.

NGF ships are either in DS or GS. Ships with a DS mission fire for specific units, normally a maneuver battalion. Other units can get naval gunfire as directed by the Navy fire support group commander, the division NGFO, or the brigade naval gunfire liaison officer (NGLO).

3-11. The Commander's Other Fire Support Resources

When the commander orders, fire support may also be provided by attack helicopters

(AH), selected air defense (ADA) weapons in a surface-to-surface role, and tanks firing indirect fire. *Use of these weapons for fire support removes them from their primary mission* and the commander must carefully weigh that loss against his need for additional fire support. The FSCOORD must be prepared to integrate these weapons into the fire support system when the decision is made.

The FSCOORD has differing degrees of responsibility for planning and coordinating these fires on a mission-by-mission basis. He must fully understand their capabilities and limitations and use them to enhance the combat action and augment the primary fire support means.

☐ Attack Helicopters

Attack helicopters are limited only by a combination of fuel capability and flight time, weather and visibility restrictions, and the air defense environment. Their full effectiveness is achieved as an aerial *maneuver* unit—by platoon, by company, by battalion. Their mobility and capability to maneuver rapidly and mass fires in any type of terrain, regardless of wide battlefield dispersion, make AH an especially capable target attack means. They can provide a heavy volume of fire in terrain or a tactical situation that limits effective and economical use of FA, mortars, CAS, and NGF.

Attack helicopter pilots may acquire targets visually. Preferably, targets are acquired and "handed off" to them by aerial scouts, ground or aerial observers, or other target acquisition means. The types of targets for attack should be carefully specified. The AH has a wide variety of ordnance, and knowing the type of target insures that the best ordnance mix is loaded to match the target. A detailed discussion of attack helicopters and available ordnance is in appendix F. The objective of AH employment is to put the aircraft on station at the right time with the right munition. This must be well coordinated since AH loiter

time is short and the enemy's air defense array is lethal. Scheduled or on-call field artillery fires may be required to suppress enemy air defenses for the attack and to cover their withdrawal after the mission. The movement of AH during attack must be carefully coordinated so FA and other indirect fires can continue.

FIST members can adjust some fires delivered by attack helicopters; however, it is more likely that the AH crew or the unit's aerial scout would conduct the adjustment with guidance from the FIST. Actual delivery of munitions, as with CAS aircraft, is accomplished by the helicopter pilot.

☐ ADA Weapons

Two air defense artillery (ADA) weapons have the capability to engage ground targets. They are the Vulcan gun system and the Nike Hercules missile system.

The Chaparral/Vulcan battalion in infantry, armor, and mechanized infantry divisions has two self-propelled Vulcan batteries with 12 weapons in each battery. Towed Vulcan battalions in airborne and airmobile divisions have 4 batteries of 12 weapons each. The Vulcan's accuracy, high rate of fire, mobility, and lethality in the direct fire role make it effective against troops, lightly armored vehicles, and wheeled vehicles. When employing Vulcan in the ground fire role, the maneuver force commander must consider the degree of degradation in air defense support he can afford.

Nike Hercules batteries have the capability to deliver long-range nuclear or conventional surface-to-surface fires. Its long range and excellent delivery accuracy make the Nike Hercules an effective weapon for use in destroying enemy air defense missile positions in its rear. The assignment of a surface-to-surface mission eliminates the battery from performing the air defense mission during the duration of the surface-to-surface fire mission.

□ Tanks

The M60A1 tank is a maneuver weapon. However, the commander may decide to use it for indirect fire support (such as during a deliberate crossing of an unfordable river before bridges are in for all tanks to cross). Tank munitions for indirect fire are high explosive plastic (HEP) and WP.

A tank has a high rate of fire. However, its ammunition-fuze combinations are limited and the larger range dispersion makes adjustment times long. Like ADA weapons, tanks used in indirect fire support are unavailable for their direct fire mission.

Tanks can fire in the indirect fire role against "area type" targets of a known range such as chokepoints along avenues of approach, areas around bridges, and assembly areas. These type targets facilitate adjustment of fires.

□ Command and Control

The *command* of attack helicopters, ADA weapons, and tanks resides with the unit commander to whom they are organic, assigned, or attached. When attack helicopters, air defense artillery weapons, and tanks are used for indirect fires, both *supporting* and *supported* elements must know the commander's rules for their employment. The FSCOORD of the commander assigning the fire support mission insures that the commander's rules are established and known by all concerned. The rules describe what support the system will provide and responsibilities concerning:

- Priority of fires—Who fires what for whom in priority?
- Zone of fire—Where do they shoot?
- Available munitions (types-amounts)—How much is available for this mission?
- Liaison needs—Where and to whom do officers and NCO's report?
- Communication needs—What radios and what frequencies are used?
- Positioning (if appropriate)—Do tanks shoot from present location; if not, who positions?

- Fire planning—Does the maneuver unit plan or does the FSE or FA FDC plan?

(On these rare occasions when AH, ADA, and tanks are used in a fire support role and the unit does not plan its *own* fires, AH fire support fires are normally planned in the FSE while indirect tank and ADA fires are planned in an FA FDC or TOC.)

In summary, AH, tank, and ADA units will sometimes perform in the fire support role, and the supporting unit FSCOORD will have some degree of control. He is responsible that these fires are integrated so they complement and augment the overall fire support scheme. He can do this well only if the rules are specifically spelled out when the unit is placed in the fire support role.

3-12. How to Fit the Fire Support System into the Battle Plan

The commander's battle planning begins when he receives or assumes a mission and continues throughout the execution of the mission. During the dynamic process of evaluating, refining, revising, and deciding how to accomplish his mission, the commander constantly seeks the most efficient and effective application of *all* his resources to generate maximum combat power. The FSCOORD, as the commander's special staff officer for fire support, performs a critical role in this planning process. He insures that the commander has all necessary information on available fire support and recommends how best to apply it in concert with his other resources. To get the most out of his FSCOORD, the commander will include him in every step of his decisionmaking process.

The *commander's estimate* is a method or tool which the commander uses to formulate his plan of action.

THE COMMANDER'S ESTIMATE

Commanders use a tool called the *Commander's Estimate* to arrive at their decisions and concepts for their battle plans. While each commander may apply the tool differently, each follows the same general outline.

1. **Mission Analysis:** What are the *specified tasks*? Are there any *implied tasks*? Can I restate the mission so that it is clearer?
2. **Action Constraints:** What factors limit or determine the bounds of action? Do I understand them?
3. **Information and Significant Factors:** Gather all known data relating to the mission, then determine what is missing. Develop realistic substitute data based on *predicted*

Analyze the mission.

Gather information and develop course of action.

Wargame and compare alternatives.

Make a decision and announce it.

enemy situation where necessary. Then based on all of the above, derive feasible courses of action.

4. **Compare Alternatives:** *Wargame* each course of action against the enemy situation. Determine which course of action is best and determine significant/critical factors.

5. **Decision:** Refine the selected course of action in terms of resources and time available. Then announce the decision and intent.

This estimate answers the question: "How will I apply my resources to best accomplish my mission?" It produces the "design" of the battle plan.

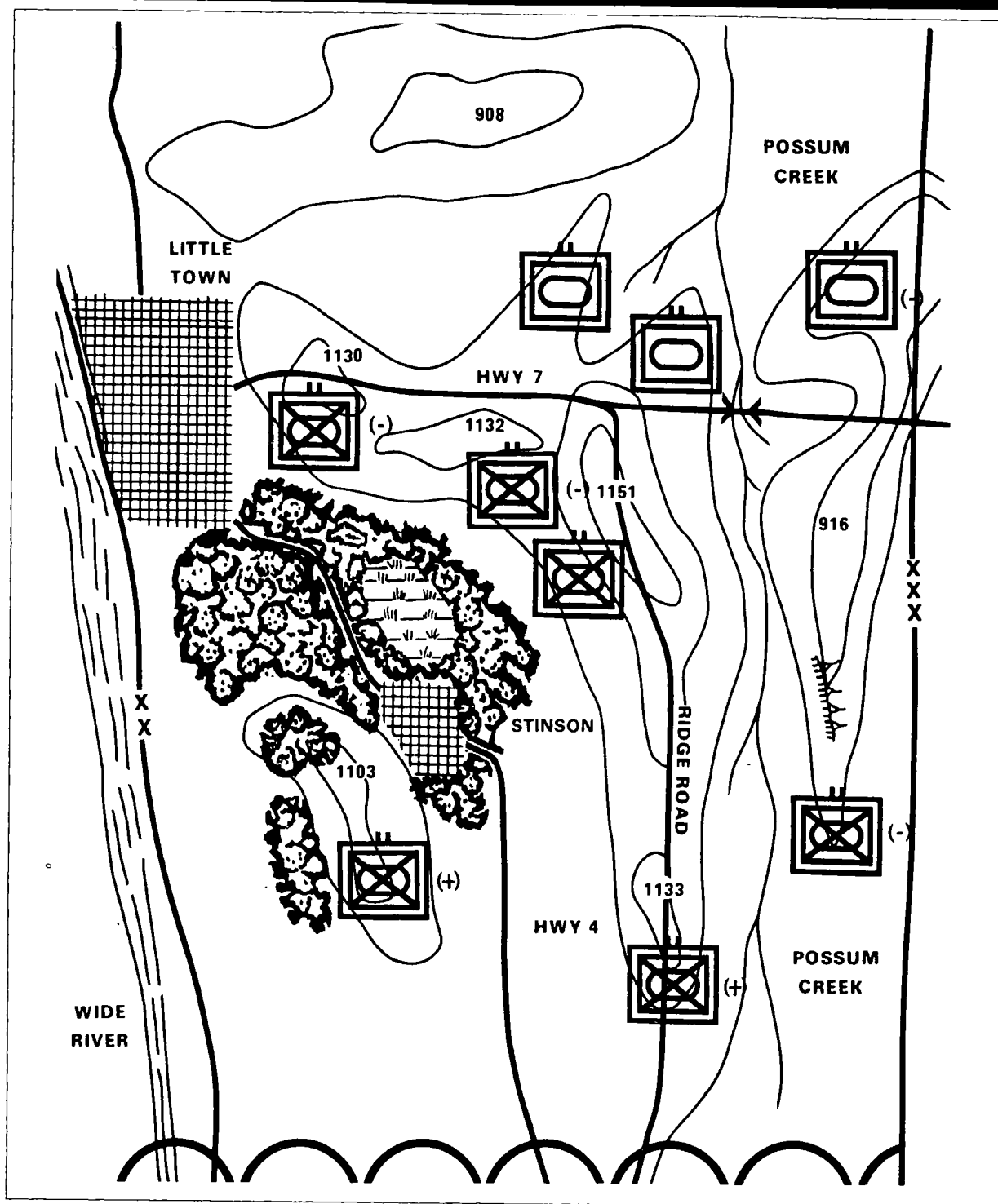
The example below shows how a commander might go about arriving at his decision. When more time is available, as in planning for a deliberate attack, this process may be quite methodical and detailed. During the battle, the commander is constantly anticipating, estimating, and evaluating the situation. Under those conditions, the estimate process is less formal, producing rapid, sound decisions based on immediate information and needs.

Mission Analysis. Mission analysis begins when the commander receives a

mission or deduces a mission from combat dynamics. Mission analysis is *dynamic* and continuous. The commander determines first what must be done—what tasks are *specified* in his mission. Next, he determines an *implied* task required to accomplish his mission.

Mission: From Corps Frag Order

Division attacks 020600Z Jun, secures Highway 7 ridge from LITTLE TOWN to POSSUM CREEK, protects the corps east flank and prepares to continue the attack to the north. Following units attached at times indicated: 201st Armd Cav Regt, 010600Z Jun; 62d FA Bde 011400Z Jun. (Refer to sketch map in figure 3-9.)

FIGURE 3-9. SKETCH MAP.

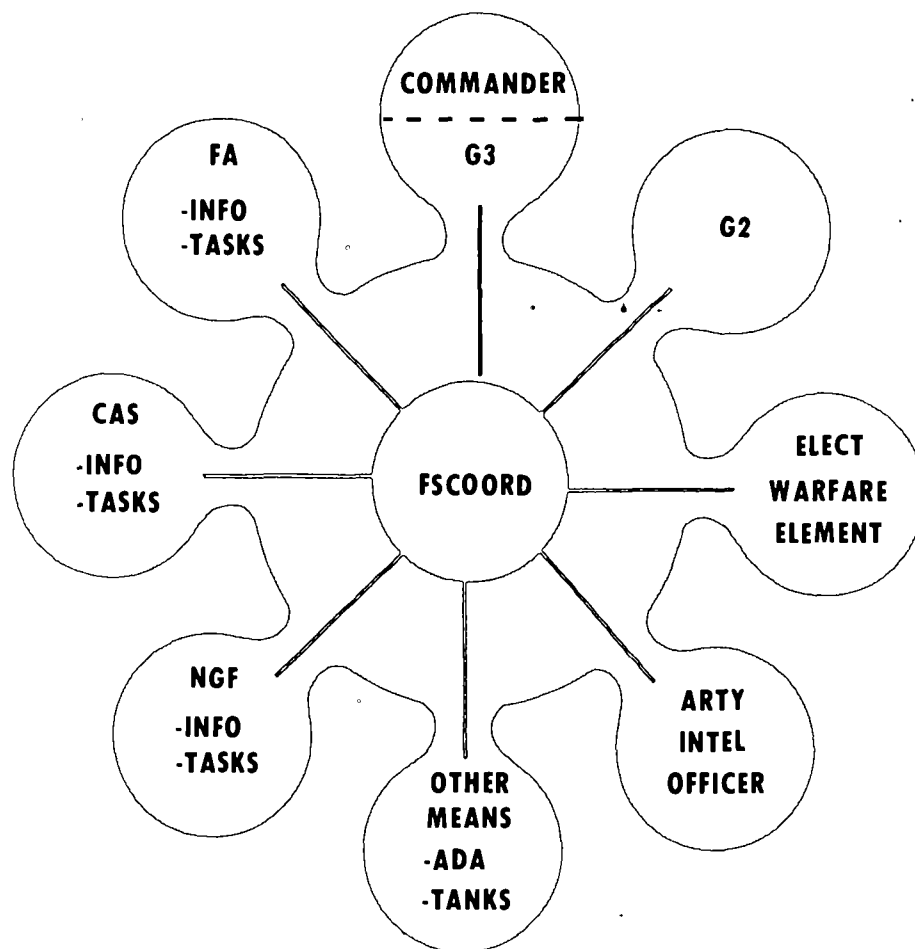
**THE COMMANDER'S MISSION
ANALYSIS RESULTS IN A RESTATED
MISSION THAT CLARIFIES SPECIFIED
AND IMPLIED TASKS.**

The division commander determines his specified and implied tasks from his mission analysis and applies these tasks to the terrain in his zone. He then restates the mission to insure complete task understanding:

"Division attacks 020600Z Jun to secure the high ground from Hill 1151 to Hill 1132 and Hill 1130; protects the corps east flank; and prepares to continue the attack to the north."

The commander then issues guidance to his staff, including the FSCoord, to begin the detailed information collection effort to further examine his tasks. He identifies considerations that establish bounds of action and a framework for further analysis. "As we mass our forces to break through the enemy's initial defensive belt, we must use multiple routes to speed our movement to the breakthrough area. This will reduce our vulnerability to enemy air attack and artillery fires. We must rapidly punch through the initial defensive belt. Massed fire support from all means will help us make the hole in his defenses and keep him suppressed as we strike deep into his rear area to destroy his command and control system. It is critical that we get to the high ground from Hill 1151 to Hill 1132 as quickly as possible before he can reinforce that area. When we succeed here, his defense will be so badly disrupted that we can easily destroy what is left of his force. The 201st ACR has been protecting the corps east flank and I would like them to continue in that role. We need to keep movement of division aircraft and vehicles to an absolute minimum. We need a plan that will prevent the enemy from moving reserves to meet our attack, while keeping our main effort location concealed as long as possible. I want to avoid getting tangled up in Little Town. Make sure that refugees don't interfere with our attack."

Information and Significant Factors. With this guidance, the FSCoord and the rest of the staff collect all significant information they can that relates to the

FIGURE 3-10. FSCoord INTERACTION WITH AGENCIES.

mission. They filter it, then present the most important information to the commander. The FSCoord's primary efforts will be to determine

- the status of our fire support assets,
- asset strength and controlled supply rate,
- CAS sorties available, and
- status of enemy fire support in the zone including strength, location, disposition, target acquisition assets, command and control layout, and the most likely method of employment.

The FSCoord interacts with many agencies to get this information (fig 3-10).

The FSCOORD refines the information he has compiled and the commander uses it—in harsh, objective terms—to see how his forces stack up against the enemy in relative combat power. This includes

- relative maneuver strength,
- firepower differentials, and
- combat power multiplier effects.

The FSCOORD's input to the commander's analysis is critical: *Combat power differentials are very significant factors determining the tactics of a course of action.* (For a discussion of the computation of combat power differentials, see FM 101-5.)

Compare Alternatives. After comparing the total friendly and enemy situations, the relative strengths and weaknesses, the commander develops tactical courses of action—logical, feasible options for getting the job done, courses that maximize his strengths and minimize his weaknesses.

The FSCOORD assists the commander by

- providing new or refined fire support information,
- insuring that optimum use of fire support is incorporated into each course of action considered, and
- answering questions or providing advice on course of action feasibility from a fire support standpoint.

The commander himself, however, is the focal point for determining the courses of action, the what, when, where, and why of the several options available. Each course of action must accomplish the restated mission and answer the following questions:

- Is the course of action feasible?
- Will it accomplish the mission without undue damage to the command?
- Is it distinguishable from the other courses of action?

In the situation given the commander developed these courses of action:

□ *Course of Action No 1:* Attack 020600Z Jun with the main attack in the direction of Hill 1103-Stinson-Highway 7 ridge supported by massed FA and CAS fires to secure Hills 1130, 1132, and 1151.

□ *Course of Action No 2:* Attack 020600Z Jun with the main attack in the direction of Hill 1133-Ridge Road-Highway 7 ridge supported by massed FA and CAS fires to secure Hills 1151, 1132, and 1130.

Wargame Courses of Action. Now the commander begins the most important phase of his decision process. He *wargames* each course of action against probable enemy actions to see how the battle will progress. He mentally fights each action up to and including mission accomplishment to determine risks involved and the probable success of each course. Of course different commanders will have different staff officers present during the wargaming process. A common solution, however, is for the commander to have himself, the G3, the G2, and the FSCOORD present. It is perhaps during the wargaming process that the FSCOORD makes his greatest contribution to the planning effort.

As the commander wargames, the FSCOORD provides the most current information for applying all fire support system elements. While the commander fights his way through each incident in the wargames to determine factors critical to success, the FSCOORD mentally

- attacks appearing targets with the most effective system;
- foresees the tasks for all fire support system elements;
- considers proper distribution of assets for close support of maneuver elements, counter-fire, and suppression of enemy air defense weapons;
- visualizes fire support unit movement required to follow the battle flow; and
- considers logistical needs and their impact on the battle.

During this process, *critical factors* will emerge that are directly related to fire support. That is why the commander keeps the FSCOORD involved as he wargames and refines his plan.

Example of Wargaming. The example that follows examines a course of action to highlight the main maneuver concerns and emphasize the fire support input to that

evaluation. This example will not cover every detail nor individual that the commander is concerned with, but it will serve to show the critical relationship between the commander and his FSCOORD during the decision-making process.

Wargaming a Course of Action (Refer to sketch map, fig 3-9.)

□ *Course of Action No 2: Attack 020600Z Jun with the main attack in the direction of Hill 1133-Ridge Road-Highway 7 ridge supported by massed FA and CAS fires to destroy enemy forces and secure Hills 1151, 1132, and 1130.*

CDR: "The main effort initially encounters a reinforced motorized rifle battalion south of Hill 1133 in hasty defensive positions. We can reduce enemy combat power by firing an artillery and mortar preparation on these forces and on the adjacent enemy battalion to the west. John (FSCOORD), can we screen movement into this area? The terrain doesn't provide good masked, concealed routes there and we'll be vulnerable when we move in that area."

FSCOORD: "Wind conditions are favorable so we can smoke the area with both HC and WP, but we have to be selective in this effort. We don't want to expend all our smoke ammo here. We'll need more as we get beyond the first defensive belt. I'll refine targets for obscuration at the penetration with the G2."

CDR: "Good. We need to suppress that battalion and the one to the west so our maneuver forces can move rapidly through the initial defensive belt. After we get through it, we'll pass in the vicinity of some deep caves on the slope of Hill 916 that provide excellent protection to the defender. What can we use to neutralize them?"

FSCOORD: "Sir, the ALO says that we have 50 CAS sorties allocated so we'll be able to put some air on the caves. We will still need to plan artillery and mortar fire to suppress the area as we bypass it, however."

CDR: "All right. Now, the enemy has two tank battalions in reserve to the north and east of Hills 1151 and 1132. We can use some tac air on those to prevent them from hitting our

THROUGHOUT THE WARGAMING PROCESS, THE COMMANDER AND FSCOORD INTERACT CLOSELY TO DETERMINE ALL MANEUVER AND FIRE SUPPORT FACTORS THAT ARE CRITICAL TO ACCOMPLISHMENT OF THE MISSION.

main effort and to further pare away his combat power. To deceive him as to the location of our penetration, to fix other enemy forces, and to prevent him from committing his reserves early, we'll need a supporting attack in the west...and we can feint on the east side with the 201st ACR because enemy strength there is very weak.

"The penetration will start south of Hill 1133 and penetrate to the west of Ridge Road ridge. This will take three mech and two tank battalions. By the time the enemy is aware of our main thrust, we should be near Hill 1151. I see a critical phase here if he attempts to reinforce the area. We have to have plenty of artillery and mortar fires available to the lead forces to isolate that area so we can keep our momentum going. We may have to commit the division reserve at this point to secure Highway 7 ridge. If we don't have to, the lead forces can continue north and west to destroy forces on Hills 1151 and 1132. We have to be prepared to continue beyond Highway 7 ridge to destroy any defenders just north of 1151 and 1132.

"During this time, the supporting attack should be widening the penetration and bypassing Stinson Swamp. They will have to put heavy pressure on Hill 1130 to keep those forces from reinforcing the Ridge Road area. We should give that brigade commander some air also, so he has it available for his planning purposes. We need to plan on engaging deeper targets to fix other enemy reinforcements on the move. Can we have batteries in position to fire on Hill 908?"

FSCOOD: "Yes, sir. We'll be able to range 908 by then. At the same time, the lead forces on Highway 7 ridge are probably going to start taking some enemy artillery fire unless we shoot heavy counterfires with the GS battalions. I suggest we also plan CAS on 908. That will give us good effect against the tank-heavy reserve units and keep the GS artillery free for immediate counterfire."

This process continues with the commander examining all possible actions to

insure that he has determined all the factors critical to success. All members of the staff, of course, assist in their areas of expertise. In this short example, the FSCOOD

- provided the commander fire support advice and recommendations;
- got an early "feel" for the critical fire support tasks and implications for the course of action; and
- began to identify with the commander the fire support assets subordinate units will need to accomplish their portion of the mission.

When the wargaming is complete, the FSCOOD will have determined which course of action can be supported from the viewpoint of the fire support system. If a course cannot be supported or underutilizes fire support, the FSCOOD must advise the commander of that situation. This ought to be a rare occurrence since the commander has involved his FSCOOD throughout the major steps of the decisionmaking process.

After all courses of action are wargamed and analyzed, and their advantages, disadvantages, and risks are identified, the commander decides which course of action to follow. He then restates it and elaborates on his concept of the operation to include who performs elements of the mission and his intent during all phases of the operation. His concept and intent will form the basis for paragraph 3a, "Concept of the Operation," in the operations order.

Decision. After the commander has wargamed, he announces his decision:

"Division attacks 020600Z Jun with two brigades abreast. 3d Bde, consisting of two tank battalions and three mechanized battalions, will make the penetration in the direction of Hill 1133-Ridge Road to secure Hills 1151-1132. 1st Bde consisting of one mechanized battalion and one tank battalion makes a supporting attack in the direction of Hill 1103-Stinson-Valley Forest to secure Hill 1130. ACR conducts a feint east of Possum Creek and protects the corps east flank. Division cav squadron will screen the division

west flank. The attack will be supported by an artillery preparation on forces in contact on Hill 1103 and Ridge Road, and by airstrikes on defensive positions along Highway 7 ridge. Use the remaining airstrikes on enemy reserve concentrations and, if necessary, on hardened defensive positions in the enemy's first defensive belt. Div arty will prepare counterfire programs to commence right after the prep. Enemy air defense weapons will be engaged in coordination with airstrikes as the attack progresses. 2d Bde, consisting of two mechanized battalions and one tank battalion, will be in reserve initially. It will follow the 3d Bde and be prepared to reinforce and support the penetration."

The mission of the division's fire support system is contained in the commander's concept. Nothing stated should have surprised the FSCOORD since he has already developed a fairly complete appreciation for how best to use fire support during the operation from the wargaming. Although he has been briefing and consulting with his various fire support agency representatives (NGF, CAS) throughout the estimate and decision process, the FSCOORD now focuses his attention on them. They will have much to do.

☐ FSCOORD's Actions

The FSCOORD must now accomplish three very important things. He must recommend the best way to

- ☐ match the division's fire support assets to the tasks deduced from the wargaming;
- ☐ insure that each subordinate unit has enough fire support allocated to accomplish its mission; and
- ☐ insure flexibility in the fire support system to meet the unexpected.

Meeting with other fire support representatives (CAS, NGF), the FSCOORD quickly reviews the commander's battle plan

and critical fire support tasks therein. The division-level fire support tasks are distributed to the agency most effective in dealing with them and suballocation of assets is studied. Each agency provides input to the division fire support plan—with guidance that the input be limited to those things the *maneuver commander* needs to know (What are FA, CAS, and NGF going to do in the operation?). The input is received and approved by the FSCOORD who incorporates it into the division fire support plan.

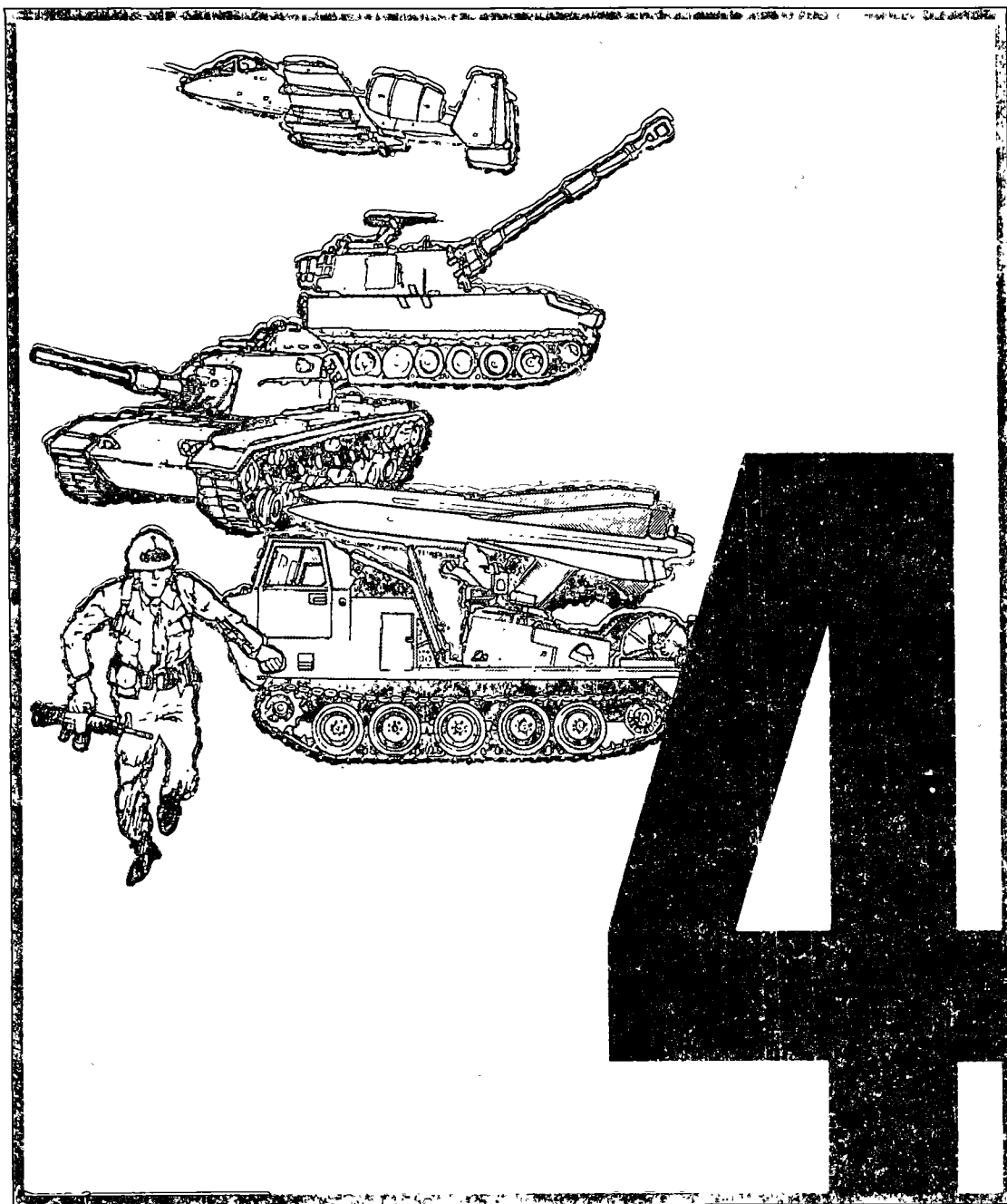
The "How To" information is then assembled and prepared as the FA, CAS, and NGF support plans described earlier. They tell executing agencies what targets to attack, when, and with what munitions. At division level the FA support plan is written at the division main FSE by the NGFO and the asst G3 for close air support, respectively. These plans are distributed to the executing units, and a copy is furnished to the FSCOORD.

Since the planning system is a dynamic process, plans will be constantly changed and updated. New targets will be acquired; enemy units will move; and changes in the friendly situation will occur. The FSCOORD will continue to supervise the planning and coordinating effort until the operation is complete.

3-13. Summary

This chapter has discussed the organization and operation of the total fire support system and has focused upon the integration of combat power by the maneuver commander and the FSCOORD. In the next chapter, *Offense*, the principles outlined in this chapter will be applied in the planning and conduct of the offensive.





Offense

*To move swiftly, strike vigorously,
and secure all the fruits of victory is
the secret of successful war.*

— Stonewall Jackson, 1824-1863

4-1. Purpose of the Offense

By taking the offense, we seize the initiative, carry the fight to the enemy in his positions, and *seek the decision on our terms*. FM's 100-5 and 71-100 describe fully the purpose, fundamentals, and types of the offense. This information will be summarized here along with the fire support system imperatives derived from them. Purposes of the offense are shown in figure 4-1.

WHY

- The ultimate outcome of any combat is determined by offensive operations. To be successful the attacker must concentrate superior combat power at the decisive time and place. Firepower is a key ingredient of that combat power.

WHAT

- This chapter tells you:
 - the purpose, concept, and fundamentals of the offense;
 - considerations for offensive fire support;
 - types of offensive operations and fires;
 - how to support:
 - a movement to contact,
 - a hasty attack,
 - a deliberate attack,
 - the exploitation and pursuit.

FIGURE 4-1. PURPOSES OF THE OFFENSE.

- **Seek Decisive Results on Our Terms**
 - **Regain the Initiative**
 - **Destroy Enemy Forces**
 - **Secure Key Terrain**
 - **Deprive the Enemy of Resources and the Will to Fight**
 - **Deceive and Divert the Enemy**
 - **Develop Intelligence**
-

4-2. Concept of the Offense

The primary object of offensive operations is to inflict disabling personnel and materiel losses on enemy units. This is done most often by breaking through the enemy's defensive system, driving violently and rapidly into his rear area to destroy his command/control systems, artillery, and logistics support. Occasionally, offensive operations are conducted to accomplish some lesser effect—to secure key terrain or to determine enemy strengths and weaknesses. Although numerous advantages accrue even to a relatively weak defender, the defender cannot be equally strong everywhere. The attacker has one major advantage: he has the initiative—he chooses when and where he will concentrate maneuver forces and massive fire support to surprise and destroy the enemy. A commander can, with a quick thrust, break up an impending enemy attack or a congealing defense. Concentrated attacks delivered in rapid succession help gain and maintain momentum, increasing pressure on enemy command-control and personnel. It is often necessary and desirable to be in a defensive posture, but the outcome of battle is ultimately determined by offensive operations. In the offense the commander will:

- ☐ find a weak spot or create one;
- ☐ maneuver to the weakness with speed and stealth;
- ☐ penetrate or envelop the enemy—move rapidly bypassing resistance where possible to reach terrain that makes occupation of his defenses untenable;
- ☐ prepare to:
 - exploit the penetration; continue the attack to his rear to destroy HQ, artillery, other combat support, and combat service support;

repulse a counterattack; or
widen the penetration.

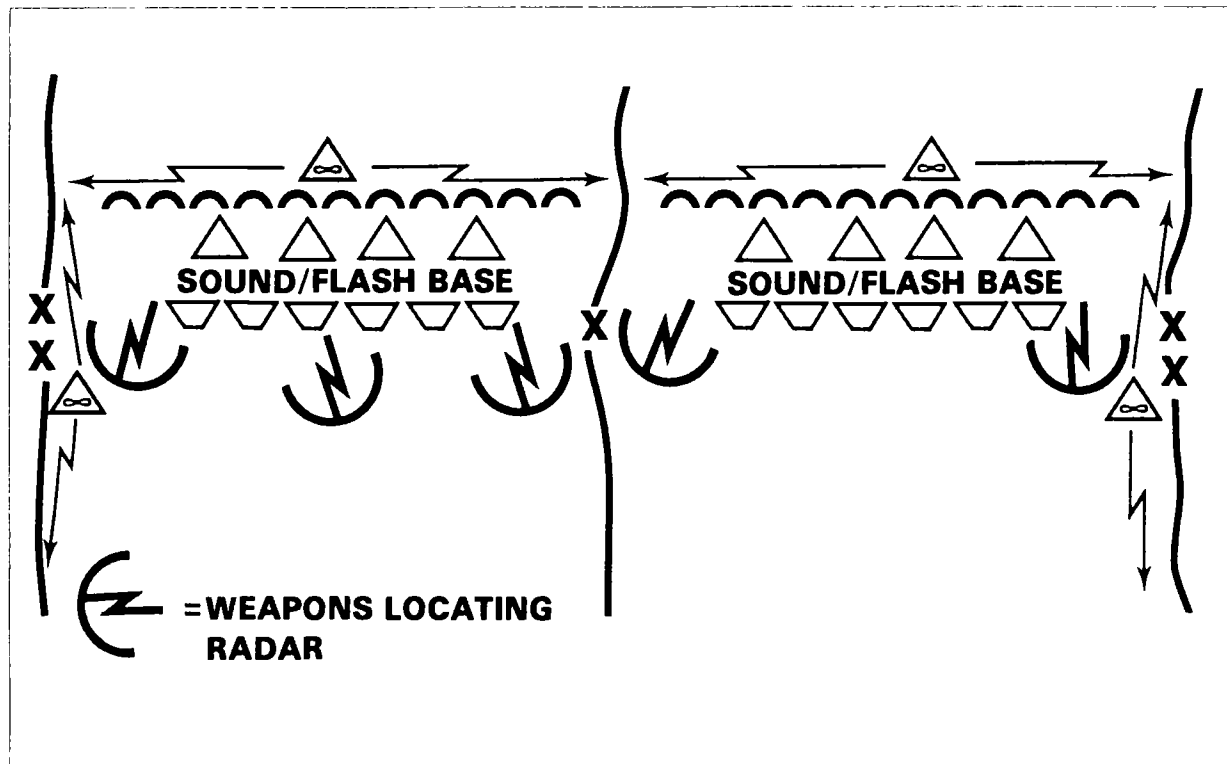
4-3. Fundamentals of the Offense

The fire support system fights with the same fundamentals as maneuver forces. Just as the force commander applies the following fundamentals, his FSCOORD tailors the fire support system and all its assets to assist.

- ☐ See the battlefield.
- ☐ Concentrate overwhelming combat power.
- ☐ Suppress enemy defensive fires.
- ☐ Shock, overwhelm, and destroy the enemy.
- ☐ Attack deep into the enemy rear.
- ☐ Provide continuous, mobile support.

☐ See the Battlefield

A defender cannot be strong everywhere. To be successful the attacker must know where the enemy is vulnerable. The commander uses intelligence sources and coordinates intelligence operations to determine the enemy's strengths and unit locations, capabilities of his weapons, and the condition of his troops. The FSCOORD maintains a constant awareness of the intelligence picture insuring that all intelligence sources are aware of fire support combat information requirements. In the offense he focuses attention on the battlefield in the same way the maneuver commander does—in search of vulnerabilities and weak areas—so that fire support efforts complement the scheme of offensive maneuver. Additionally, the FSCOORD helps the commander "see the battlefield" by insuring that target acquisition assets are effectively employed and that the results are quickly and accurately interpreted for target information. Any information of value to other agencies is quickly dispatched (fig 4-2).

FIGURE 4-2. DIVISION ARTILLERY TARGET ACQUISITION ASSETS.

□ **Concentrate Overwhelming Combat Power**

Success in an attack depends on the commander's ability to concentrate on a narrow front at a site where the enemy is weak. The attacker must thin out his forces elsewhere in order to assemble adequate combat power to break through or around the enemy's defenses. He makes careful use of terrain, reduced visibility, and other means to deceive the defender as to the location, time, direction, and strength of the attack. He capitalizes on the mobility of his forces and the flexibility of aviation, field artillery, and tactical airpower to mass rapidly and achieve surprise.

The FSCOORD makes a critical contribution to the concentration of combat power. He recommends allocation of FA, mortar, CAS, and naval gunfire assets that

facilitate the massing of firepower at the critical time and place. He exploits the range capability of FA weapons to achieve massing and shifting of fires as opposed to units. FA is positioned forward in the offense and is prepared to move farther forward once the attack gains momentum. He monitors ammunition expenditures to insure that supplies are adequate and plans deceptive measures that make thinned-out areas appear to be strongly supported.

□ **Suppress Enemy Defensive Fires**

Concentrated attack forces are vulnerable to enemy fire. Accordingly, the attacker must make suppressive strikes of such intensity and duration as to substantially degrade the effectiveness of enemy weapons in the critical area. Air defense suppression is a prerequisite to air operations. Suppression of

enemy indirect fire weapons—by air attack or counterfires—is essential to avoid high losses. Suppression of ATGM and tank gunners is essential to the success of maneuver forces. *The FSCOORD's job is to coordinate indirect fire suppression with direct fire suppression and maneuver of forces.* Suppression of direct fire weapons is planned at battalion TF and company team level. Smoke and HE suppressive fires are delivered by mortars and FA. Indirect fire weapons are attacked by counterfire planned at division artillery and executed by FA and CAS. Suppression of enemy air defense (SEAD) fires are normally planned at corps and division levels and executed by FA, CAS, and attack helicopter units.

☐ **Shock, Overwhelm, and Destroy the Enemy**

The attack maximizes the combined effect of speed, surprise, and violence. The advance of maneuver forces is timed to coincide with intensive suppressive fires, supporting attacks, close air support, electronic warfare, and other operations. Once the initial attack hits the enemy, there must be no letup. The attacker must penetrate, bypass points of resistance, and strike deep. The FSCOORD plans and orchestrates fire support. Available mortars, FA, CAS, and naval gunfire *mass their fires* to attain maximum devastation.

☐ **Attack Deep into the Enemy Rear**

Decisive results are most quickly gained through widespread destruction or capture of enemy command, control, and support elements. Once the attack has burst through initial enemy defenses, the attacker must drive relentlessly into the enemy rear area. Here less well defended enemy command and control centers and combat support and combat service support installations are attacked to immobilize the enemy defense. The FSCOORD plans and coordinates fire support to disrupt and destroy enemy command and control, artillery, and air

defense sites. He also masses fire support to interdict the flow of enemy reinforcements and cut off the movement of supplies for the enemy defense.

☐ **Provide Continuous, Mobile Support**

A successful attack requires continuous combat support and combat service support to sustain the forces and weapons systems essential to the momentum of the attack. In the planning of fire support the FSCOORD thinks through each step of the offensive operation and determines fire support requirements for each. He programs ammunition expenditures based on resupply capabilities, insures that routes for FA movement are adequate, and plans for good fire support communications. Imaginative planning, vigorous execution, and flexibility of response characterize the teamwork required for successful offensive operations.

4-4. Fire Support in the Offense

The following considerations form the basis for planning and coordinating fire support for offensive operations.

☐ **Decentralize Control of Fire Support**

The attacker has the initiative and can concentrate maneuver forces and firepower at the time and place of his own choosing. Because the offensive situation is less vague than the defense, the commander decentralizes control of fire support to insure that immediately responsive fires are available to maneuver units. To decentralize:

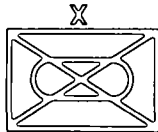
AT
DIVISION



- ☐ distribute CAS sorties to leading/attacking brigades;

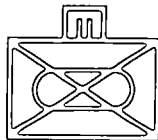
- ☐ hold less FA in general support;
- ☐ assign reinforcing (R) rather than GSR missions;
- ☐ place NGF ships in general support of brigades or in direct support of battalion task forces;

AT
BDE



- ☐ distribute more CAS sorties to leading battalion task forces;
- ☐ dedicate artillery batteries to lead company teams in the *movement to contact*;

AT
BN/TASK
FORCE



- ☐ employ battalion mortars in direct support of lead company teams; and
- ☐ give priority of CAS and FA to leading teams.

☐ Weight the Main Attack

In the offense the commander concentrates combat power at a point where the enemy is weak or can be weakened. The FSCOORD assists the commander in concentrating firepower at the critical time and place. Fire support assets are thinned out in less critical areas so that the maximum shock, suppressive, and destructive effect is provided to the main effort. More fire support is allocated to the main attack and positioned to support it. More ammunition and CAS sorties may be allocated to weight the main attack.

☐ Acquire and Attack Deep Targets

Decentralization of fire support assets facilitates fires that are immediately responsive to committed maneuver elements. However, targets beyond the acquisition

capability of the attacking force may also pose a significant threat to the success of the offensive effort. Enemy jammers require special attention to prevent their interference with command and control of friendly operations. Long range target acquisition devices and intelligence efforts must be focused on such threats. The commander and the FSCOORD establish priorities for the attack of these and other targets, and the FSCOORD insures that GS field artillery, naval gunfire, or CAS assets are available to attack them.

4-5. Types of Offensive Operations

- ☐ Movement to Contact
- ☐ Hasty/Deliberate Attack
- ☐ Exploitation
- ☐ Pursuit

Offensive maneuver is often discussed within the framework of the types of offensive operations although a force may well be conducting one type of operation while one of its subelements is conducting another. For example, division may be moving to contact while a lead battalion task force is conducting a hasty attack or the division may be exploiting while a battalion task force is moving to contact. In the offense a force finds or creates a weak point, maneuvers to the weakness, penetrates or envelops defenses, rapidly moves deep into the enemy's rear making his prepared positions untenable. The FSCOORD approaches planning for the offense as if it were a continuum—for example, plans for a movement to contact include contingencies of hasty attack, bypass, or hasty defense; plans for the deliberate attack include provisions for support of the exploitation.

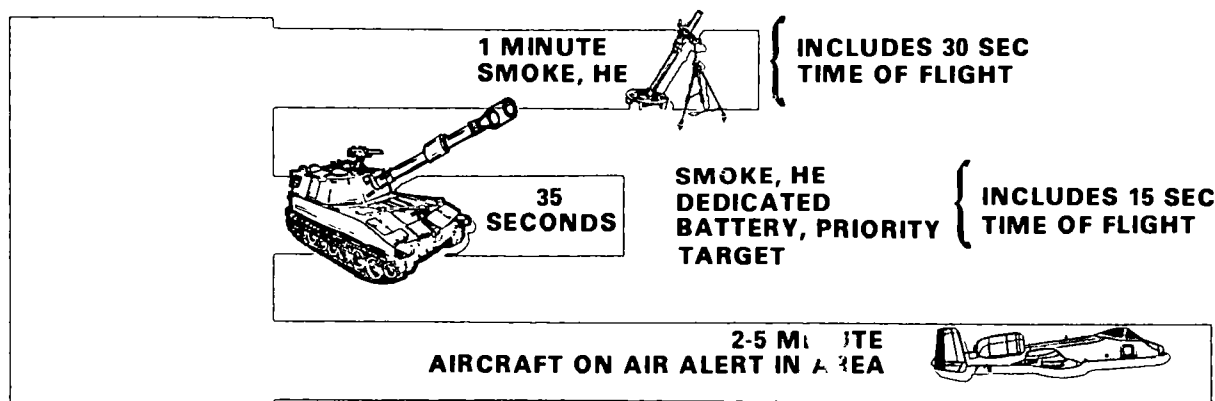
☐ Movement to Contact

The purpose of a movement to contact is to find the enemy and make sufficient contact to determine whether a hasty or deliberate

attack is in order. The force moves aggressively toward the enemy but is unsure of exactly where or when it will fight. The force moves with the smallest practicable element forward—a reinforced battalion-sized force could lead a division or a company or a cavalry troop could lead a brigade. The forward element moves along concealed routes covered by another "overwatch"

element positioned to facilitate support by fire. The commander decentralizes control to leaders to the front and flanks but retains the bulk of his combat power to permit flexible response upon contact. The FSCOORD's recommendations must *poise the fire support system for immediate response upon contact*. The most pressing requirement is for *fast suppressive fire*.

FIRE SUPPORT REACTION TIMES AT CONTACT



Maneuver commanders must make rapid decisions upon making contact. Options include bypass the resistance; conduct a hasty attack; or conduct a deliberate attack. FSCOORD's must understand the urgency of this situation. While the maneuver commander determines the best course of action the FSCOORD coordinates fires to augment those of the overwatch and at the same time prepares to support the chosen course of action. If the enemy force is bypassed, the FSCOORD coordinates with the commander and suppresses it until his unit is safely past.

☐ Hasty Attack

The hasty attack is conducted to maintain forward momentum against light resistance. If resistance is heavy, a hasty attack may be

conducted to further develop the situation. Speed is essential—if momentum is lost the hasty attack will fail. The commander deploys his forces rapidly using cover provided by terrain and supporting direct and indirect fires. As maneuver elements transition from bounding overwatch into the attack, fire support from mortars, FA, and CAS are massed in support. These fires must be closely coordinated—held on enemy positions until the last possible moment—so they *add* to the momentum of the attack. The FSCOORD also plans fires on enemy mutual support positions, flank approaches, and likely routes of enemy reinforcement.

☐ Deliberate Attack

When a commander determines that he has encountered a strong enemy force in well-

prepared positions, he conducts a deliberate attack. A deliberate attack aims at a penetration on a narrow front or an envelopment around an assailable flank, seeking to move deep into the enemy's rear. It is characterized by more detailed knowledge of enemy positions, deliberate planning, and greater volumes of supporting fires. The FSCOORD has more time to use intelligence sources, adjust ammunition stocks, and make contingency plans. Massed fires are targeted to support the commander in his attempt to *make a hole* in the enemy's defense. Fires are also planned to suppress forces on the shoulder of the penetration, fix enemy forces away from the penetration, and prevent reinforcement by second echelon forces.

□ Exploitation

Exploitation is an operation conducted to follow up success in the attack. Exploitation forces drive swiftly through a penetration for deep objectives, seizing command and control facilities, blocking escape routes, destroying reserves, and denying the enemy time to reorganize. Exploitation forces are large, reasonably self-sufficient, and well supported by tactical air, air cavalry, and attack helicopters. Normally, the force achieving the penetration remains to hold the shoulder, and a previously uncommitted force conducts the exploitation. The newly-committed force, however, receives fire support from in place units. This change will be difficult for FA units unless FSCOORD's have included specified on-order missions in battle plans and carefully supervised positioning. As the exploitation begins, the commander and FSCOORD decentralize control of fire support elements. One of the FSCOORD's most important concerns is resupply of ammunition.

□ Pursuit

A pursuit is conducted against a retreating enemy to cut off and annihilate his forces. Direct pressure is maintained by forces as

other forces envelop the enemy, cut off his line of retreat, and destroy his forces. Pursuit requires great energy and resolution to press on despite fatigue or approach of darkness. Fire support is even more decentralized than in other offensive operations. Since the pursuit can continue only so long as it is supplied, the commander and FSCOORD concentrate their efforts on resupply.

□ Other Offensive Operations

Raids, diversions, feints, demonstrations, and reconnaissance-in-force are generally limited-objective or specially designed operations that follow basic considerations of both maneuver and fire support set forth earlier in describing hasty and deliberate attacks.

4-6. Fire Support Tasks in the Offense

The commander of a force on the offensive should expect the fire support system to do these things.

Support the *movement to contact* by

- providing immediately responsive fires to leading company teams,
- suppressing enemy positions with smoke and HE-VT,
- attacking deep targets with massed fires and CAS,
- suppressing enemy air defense and indirect fire positions,
- screening friendly maneuver units with smoke, and
- planning for hasty attack contingencies.

Soften enemy defenses *before the attack* by prearranging short, violent *preparations* targeted against:

- frontline defenses,
- OP's,
- command and control,
- indirect fire weapons, and
- reserves.

For maximum effect, fires are lifted at the *last possible moment*. For more details see appendix H.

Provide support *during the attack* to

- neutralize or suppress hostile forces, weapons, observation, or electronic jammers that could impede the attack;
- suppress the enemy on the objective, obscure his vision, screen friendly movement;
- neutralize resistance during the final assault; and
- isolate the objective with fires beyond and to the flanks.

Plan fires during *consolidation* to

- protect reorganizing troops;
- break up counterattacks; and
- prevent enemy reinforcement, disengagement, or resupply.

Plan *counterfires throughout* all offensive operations to suppress, neutralize, or destroy indirect fire weapons.

4-7. Fire Support for Movement to Contact

□ Deployment of Forces

A force moving to contact deploys so that initial enemy contact is made by as small a friendly element as possible. In this manner, the commander retains the bulk of his combat power so he can swiftly maneuver and destroy or bypass enemy elements contacted and maintain momentum of the advance. The movement to contact is characterized by decentralized control and extremely responsive fire support to compensate for the relatively small amount of maneuver power forward.

A large force, such as a division, may be a considerable distance away from the enemy, and knowledge of the environment and his strengths and dispositions may be vague. In this case, the division will probably employ a covering force and advance, flank, and rear guards to provide for the rapid and uninterrupted advance of the division and adequate security. If these forces are out of range of fire support in the main body, field artillery and additional mortars may be attached to the force to insure that they are

provided adequate fire support. Close air support priorities would normally be given to these forces as well.

If there is less distance between the main body and the enemy, yet the details of his dispositions are unknown, the division will normally move to contact with brigade elements on multiple routes. In this case, major fire support assets may stay with the main body, echeloning forward as required, to insure adequate support of leading elements.

When any force makes contact, the most important concern is to gain the upperhand quickly, generate fire superiority immediately, and destroy forces that could interfere with the mission or bypass those that cannot. To accomplish this, the force must be in a good posture to concentrate combat power, especially fire support, quickly.

At the lower levels; e.g., company/team and battalion/task force or cavalry squadron, units take immediate action on contact to return fire (both direct and indirect), deploy, report the contact, and develop the situation. Fire support must be tailored to respond quickly and accurately to complement direct fire suppression, build up fire superiority, and provide the force freedom to maneuver.

□ Supporting a Division Moving To Contact (*Example*)

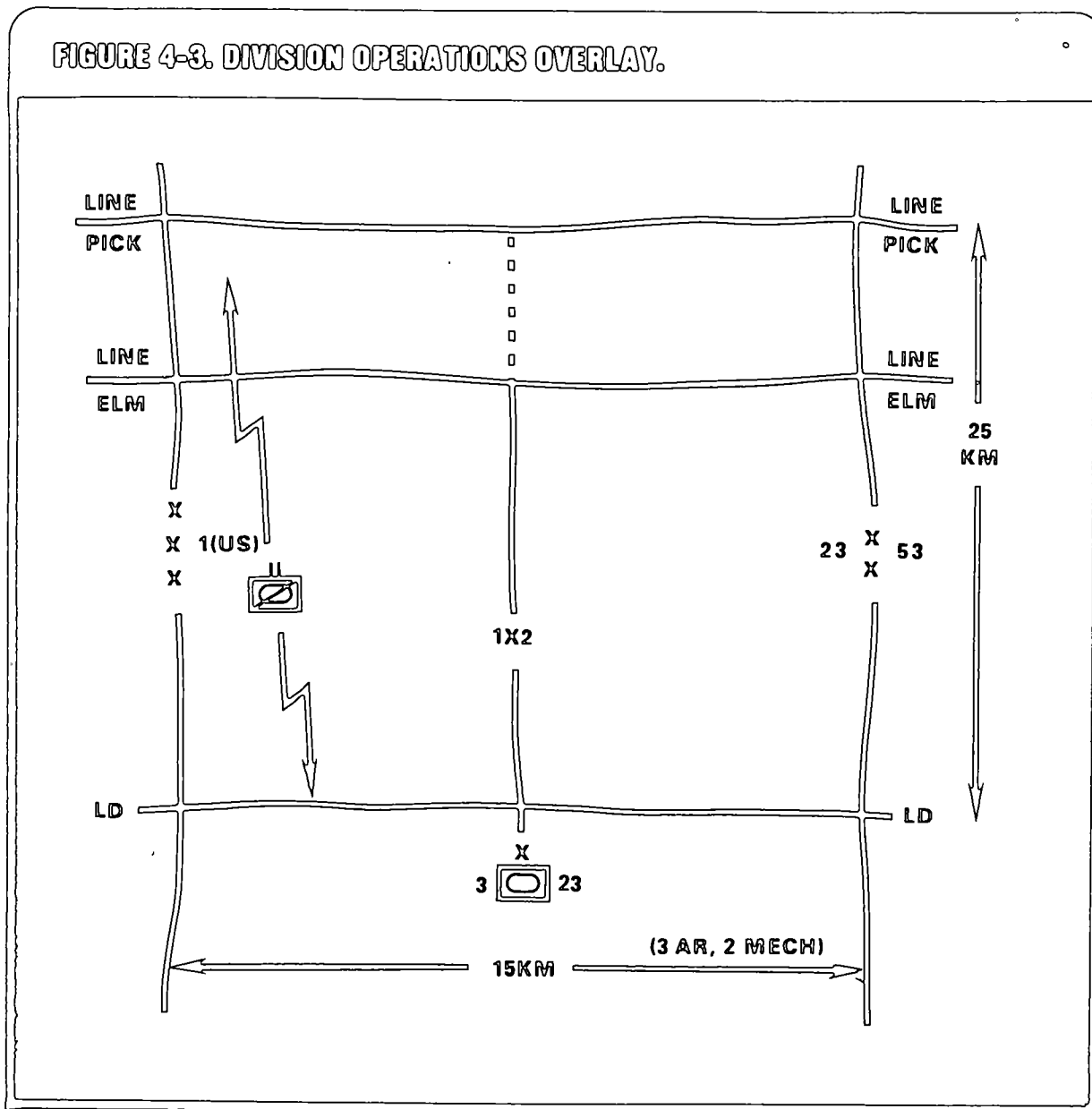
The 23d (US) Armored Division, as a part of the I (US) Corps offensive, has received the mission to attack to penetrate a line deep in the enemy sector beyond his second defensive echelon. The 53d Mechanized Division will attack on the right toward a similar line. As the forward divisions accomplish their missions, corps plans to commit its reserve armored division in whichever zone produces the best opportunity. In the 23d Armored Division zone, the division is opposed by elements of an enemy division with its first defensive echelon about 15 km distant (vicinity Line

ELM) and the second defensive echelon about 25 km away (vicinity Line PICK). Security forces are operating in the area between the current position of the armored division and the main enemy force. It appears that the friendly force will encounter various security elements in the first 12-15 km of the zone en route to the main enemy defenses.

The division commander decides to move

to contact initially on a broad front using multiple routes with two brigades abreast, a tank-heavy brigade in reserve, and the cavalry squadron screening the left flank. When the situation is more fully developed and weakness in the enemy first echelon defenses is found, he intends to pass the 3d Brigade through to penetrate Line PICK (suspected location of enemy's division second echelon) (fig 4-3).

FIGURE 4-3. DIVISION OPERATIONS OVERLAY.

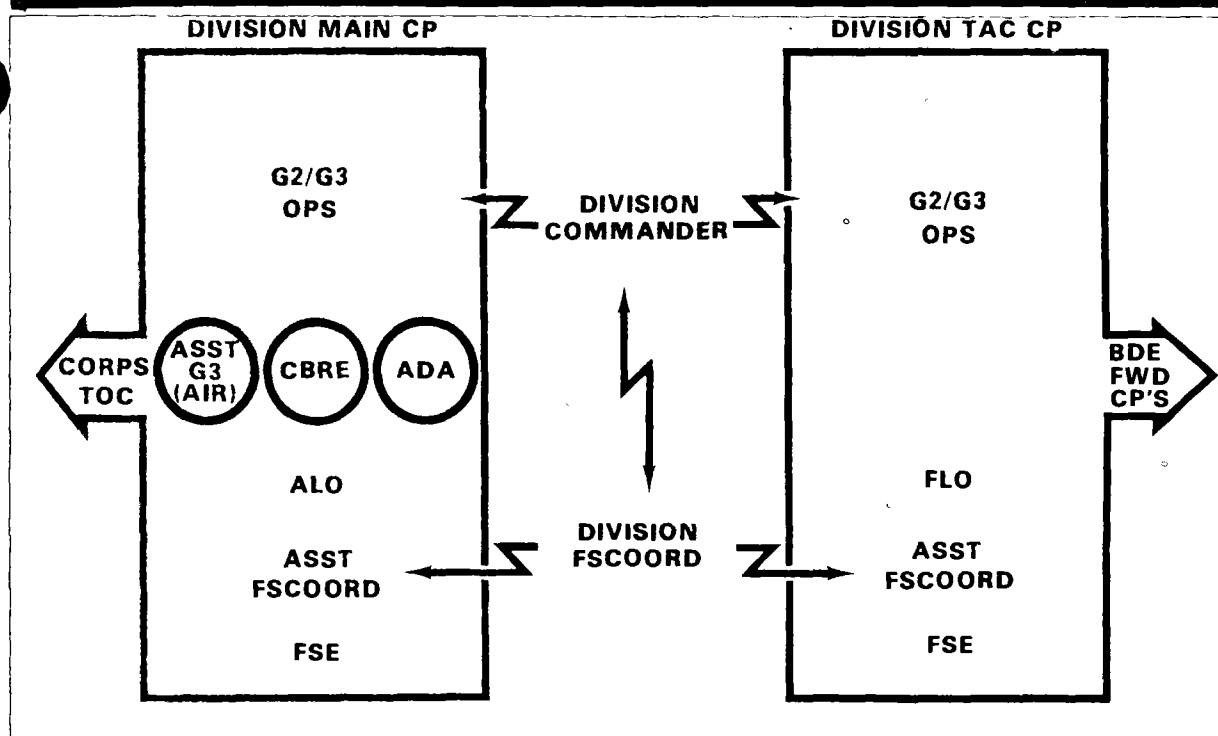


While the division has a reasonably clear picture of the general enemy situation; i.e., general location of his security area and first and second defensive belts, the specifics of his dispositions are unknown. The commander knows that leading elements will encounter security forces offering increased resistance as they advance through the initial 12-15 km. He emphasizes to subordinates the need for proper movement techniques and full use of the terrain in the advance. In discussions with the FSCOORD, the commander keys on maximum response from fire support assets to provide immediate suppressive fires for leading elements. Fire support assets must be well forward to provide initial suppression as well as massed fires as the situation develops. The organization of fire support

must provide the flexibility to support small hasty attacks throughout the division zone.

FSCOORD Activities. The division commander uses both a main CP and a TAC CP to plan and execute the division movement to contact. The main CP is primarily involved in planning while the TAC CP is concerned with immediate and near-immediate operations. As division FSCOORD the div arty commander is responsible for planning and coordinating fire support for the operation. The division commander and FSCOORD continually interact and are normally located "where the action is." Like the commander, the FSCOORD is represented in each CP by an assistant FSCOORD. These and other key individuals/elements in each CP are shown in figure 4-4.

FIGURE 4-4. DIVISION FSCOORD'S FIRE SUPPORT MANAGEMENT CONTACTS.



For a more detailed discussion of division main and TAC CP elements, see appendix I. During the planning phase for a movement

to contact the FSCOORD must provide the division commander with information on enemy fire support, recommend organization

and allocation of friendly fire support assets, coordinate target information needs with division intelligence sources, and supervise preparation of a division fire support plan that will adequately support the movement to contact. Considering the enemy situation and the commander's guidance, the division FSCOORD determines the following division level fire support tasks for the movement to contact.

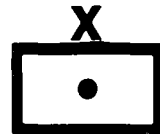
- Augment the fires of committed brigades.
- Attack deep targets as acquired.
- Provide counterfire.
- Attack enemy electronic jammers.
- Suppress enemy air defenses to facilitate air operations.
- Mass fires against large enemy forces.

Field artillery and CAS tasks include all those listed above. Because brigades will advance with relatively small forces forward, they must have immediately responsive fire support. At the same time the division commander must have fire support with which he can attack deep targets or react to unforeseen developments.

Fire Support Assets. FA: As the division moves to contact, FA assets will be positioned well forward. In addition to its own division artillery, a committed division will normally have supporting FA brigade(s), with HQ and subordinate battalions. In this example, FA assets available are:



Div Arty HHB
Tgt Acq Btry
3 155mm SP Bns
1 8-inch SP Bn



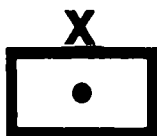
FA Bde HHB
3 155-mm SP Bns
1 8-inch SP Bn
1 175-mm SP Bn

CAS: Corps will distribute 80 CAS sorties to the division.

Organization. Although the division commander has a general idea of how the enemy is deployed, the situation is sufficiently vague that he will retain control of some fire support assets to give him flexibility to react. Once the situation becomes more developed, he will further decentralize fire support assets. The FSCOORD recommends the following organization for combat:



1 - 50 FA (155-mm, SP) DS 1st Bde
1 - 51 FA (155-mm, SP) DS 2d Bde
1 - 52 FA (155-mm, SP) GSR 1-51 FA
o/o DS 3d Bde
1 - 53 FA (8-in, SP) GS (2d priority
calls for fire to cav)



Bde HQ is Div Arty Alternate

- 1 - 401 FA (155-mm, SP) R 1-50 FA
- 1 - 402 FA (155-mm, SP) R 1-51 FA
- 1 - 403 FA (8-in, SP) GSR 1-50 FA
- 1 - 404 FA (175-mm, SP) GS

He recommends that all available CAS aircraft be placed on ground alert with a mix of antiarmor and general purpose ordnance and that four sorties take up air alert after leading elements make contact. He recommends 12 CAS sorties be distributed to each leading brigade.

This organization insures responsive fire support for the leading brigades, provides support for the screening cav squadron, and gives the division commander a considerable amount of firepower with which he can influence the battle.

Based on the uncertainty about enemy units and locations, the div arty commander keeps the div arty's moving-target radar, and three weapons-locating radars under division control along with the sound and flash platoons until the situation is developed and they can be properly positioned. He allocates two FAAO teams and one weapons-locating radar to the DS FA battalion of each committed brigade.

The artillery brigade headquarters is named div arty alternate.

Fire Support Planning. The lack of information about the enemy will cause most initial division-level fire support planning to be predictive. Fires will be planned on *likely* locations of enemy positions and reserves, indirect fire units, command and control elements, and logistics sites. Most of these will be attacked as acquired.

Positioning. The division artillery commander will position the general support and GSR field artillery. He must insure that it is all positioned well forward and that 1-53 FA is positioned within range of the cavalry squadron. The 1-52 FA will be positioned to provide GSR fires to 1-51 FA and move easily into its on order mission, DS to 3d Bde. Positioning of FA can only be done after coordination with the maneuver unit that "owns" the position area. Occasionally, when brigade zones are very shallow, this may be the division commander. Normally, however, *all* field artillery positions will fall within a brigade zone and will have to be coordinated with the maneuver commander at that level. The GS artillery will be echeloned forward as the movement to contact progresses.

Coordination. Corps has established a fire support coordination line (FSCL) 3 km beyond Line PICK to facilitate the attack of deep targets. No division-level coordinating measures are required at this time. The FSCOORD must coordinate the division fire support plan with adjacent divisions.

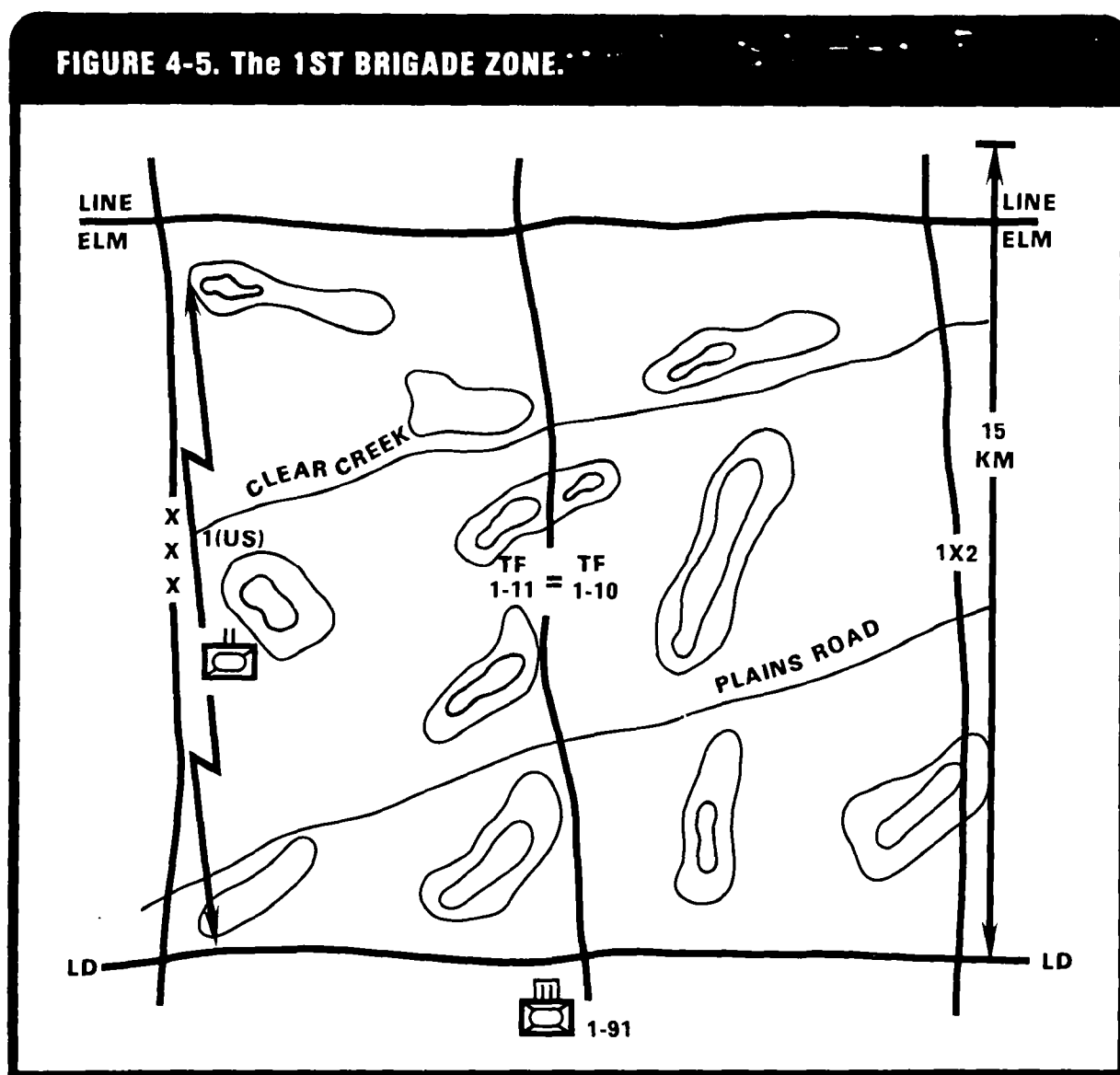
☐ **Supporting a Brigade Moving to Contact (*Example*).**

1st Brigade, 23d Armored Division, is on the left in the division attack. The brigade's mission is to penetrate line ELM (vicinity of suspected enemy division 1st echelon defenses) and be prepared to continue the attack or assist the passage of 3d Brigade. While the enemy situation is vague, the commander does expect to make contact with enemy security units in the first 5-8 km of the zone. The commander intends to bypass or quickly dispose of isolated security elements en route to his objective. He would prefer to destroy or suppress these elements with HE-VT and smoke fires and avoid extensive maneuvering to maintain the momentum of the attack. Generally open and rolling terrain provides excellent observation, but does not provide good covered and concealed routes throughout the zone. The brigade has

been allocated two tank battalions and a mechanized infantry battalion. Fire support assets include a DS FA battalion and a reinforcing FA battalion, 12 close air support sorties, and the mortars within the maneuver battalions. After analyzing his mission and mentally fighting the battle through Line ELM, the commander decided to lead with two tank-heavy task forces retaining the third tank-heavy task force in reserve (fig 4-5). To move on a broad front, he directs that task forces use multiple routes. Since enemy

contact is expected shortly after crossing the line of departure (LD), lead elements will move using bounding overwatch techniques. (Further discussion of movement techniques is covered in FM 71-1, *The Tank and Mechanized Infantry Company Team*.) With enemy contact imminent, the brigade commander is particularly concerned that immediate indirect fire suppression be available to leading elements at all times during the movement through the enemy's security area.

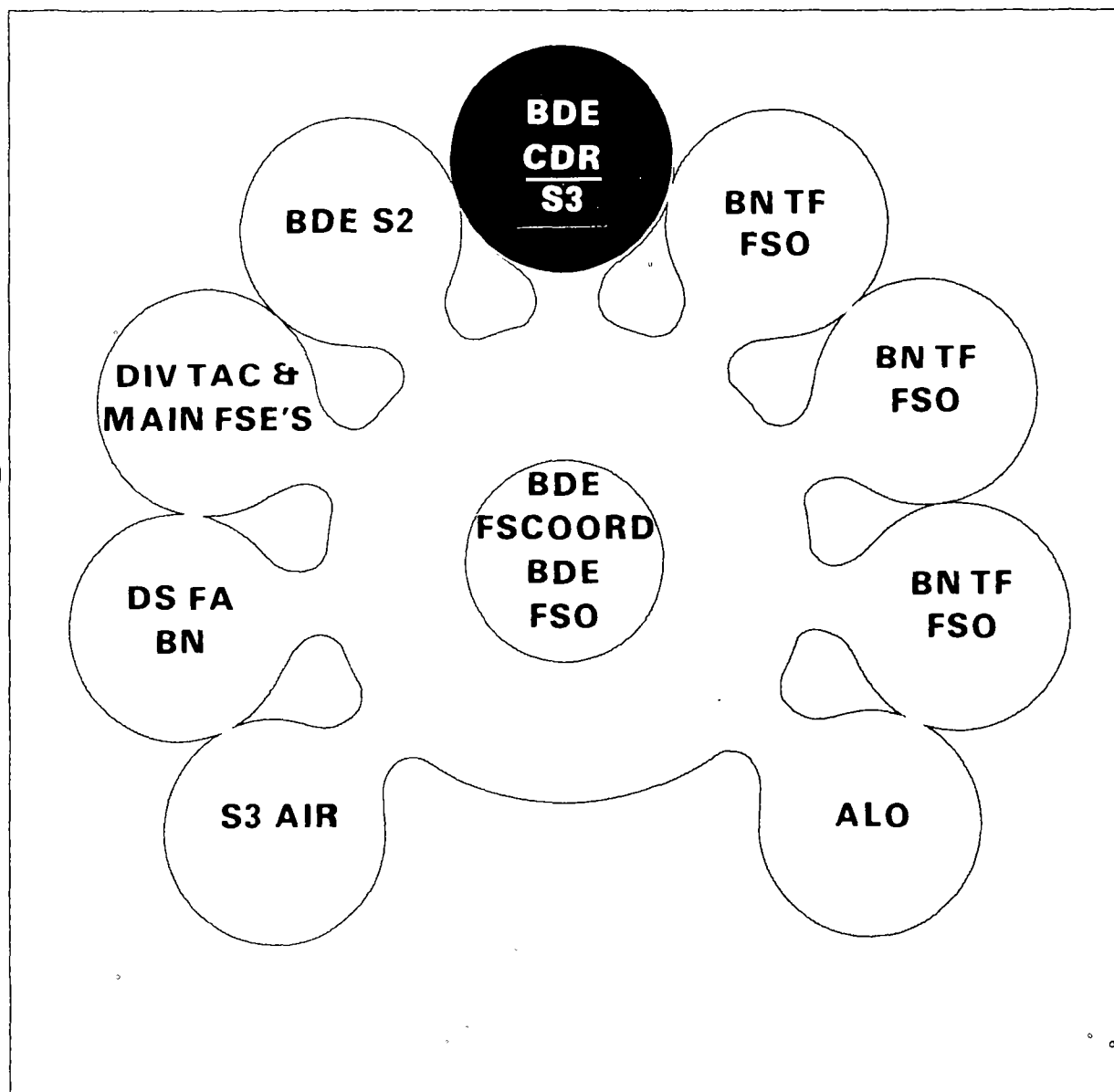
FIGURE 4-5. The 1ST BRIGADE ZONE.



FSCOORD Activities. The FSCOORD for the 1st Brigade is the commander of the DS FA battalion. He is assisted by the

brigade FSO. Several individuals and agencies become involved in planning fire support (fig 4-6).

FIGURE 4-6. BRIGADE FSCOORD/FSO FIRE SUPPORT CONTACTS.



In a movement to contact the brigade FSCOORD must be particularly careful to insure that

- each leading bn TF has access to immediately responsive fire support, and
- targets of *brigade* interest are attacked with the appropriate FS means.

At *brigade level* the *specific* fire support tasks include

- obscuring enemy vision and screening movement of advancing elements with smoke,
- providing fast mass fires from all fire support means to support brigade hasty attack or to stall enemy counterattacks,
- massing fires against mobile reserves and command posts deep in the brigade zone,
- attacking enemy mortars as acquired and other indirect fire weapons in close coordination with the div arty counterfire system, and
- attacking enemy jammers.

Fire Support Assets. The brigade has a 155-mm self-propelled FA battalion, in direct support, a reinforcing 155-mm battalion, and second priority on the fires of an 8-inch GSR battalion. Division has distributed 12 CAS sorties to the brigade as well as two FAAO teams and a counter-mortar radar.

□ Fire Support Organization

CAS. Since enemy strength and location intelligence is not detailed enough to forecast which leading TF will encounter heaviest opposition, the FSCOORD recommends brigade control of all 12 CAS sorties.

FA. Within a brigade zone a field artillery battery may be dedicated to a maneuver company team during the movement to contact. Dedication, an extension of the direct support mission, *increases the responsiveness* of the dedicated battery to *one* specific company or team. *Dedication should be used only under movement to contact conditions*, and even then its use is relatively *rare*. In certain cases,

however, such as movement up to and through the enemy's security area when the *enemy situation is vague* and a *meeting engagement seems likely*, it may pay the brigade commander and his FSCOORD to dedicate FA batteries to insure *immediately responsive suppressive fires* to support leading company-size elements. Dedication is an *extension of the direct support mission*. When in a dedicated status a battery will

- monitor supported maneuver company command nets,
- use simplified calls for fire,
- deviate from normal fire planning techniques,
- use maneuver team control measures for fire planning,
- streamline fire direction and firing battery procedures, and
- have FO work for speed first and accuracy second.

When in a dedicated status a battery will be able to deliver immediate suppression fire on a priority target in less than 20 seconds (not including time of flight). This responsiveness is purchased at a price, however, since *although the amount of responsiveness of FA support to the leading company-team has been vastly increased, the dedication of the battery has significantly reduced the firepower immediately available to the brigade as a whole*. This is why the brigade commander and his FSCOORD must carefully weigh the alternatives before deciding to dedicate a battery. Commanders and FSCOORD's must consider

- terrain,
- field artillery available,
- unit preparedness, and
- target acquisition available.

If the situation seems to be one of those rare occasions when dedication of a battery is warranted, the decision is made as shown in figures 4-7 and 4-8.

A battery's transition *into* dedicated status can be either *hasty* or *deliberate*; however,

FIGURE 4-7. CONSIDER SITUATION.**BDE CMDR**

Considering the advice of the DS BN CMDR and the requests of his maneuver battalion commanders, designates the maneuver company(s)/team(s) to receive the dedicated battery(s).

BDE CMDR

Recognizes the tactical situation as one that requires increased field artillery responsiveness for his maneuver company(s)/team(s).

FIGURE 4-8. MAKE DECISION.**DS BN CMDR (BDE FSCOORD)**

Decides how many batteries he can dedicate without *seriously* degrading the overall support of the brigade.

DS BN CMDR (BDE FSCOORD)

Designates the specific firing battery to be dedicated to a particular company/team.

once the decision has been made to dedicate a battery, approval of the brigade commander must be obtained before the DS battalion can be released from the requirement. Generally this release is sought when

- a dedicated battery can no longer be supplied,
- the mission of the supported maneuver company/team is changed and dedication is no longer required, or
- the intensity of the battle reaches a level at which fire support requirements of *the brigade as a whole* outweigh the need for providing dedicated fires to a single company team.

Additional details on the dedicated battery

are found at appendix B, *Field Artillery*.

In the *movement to contact* situation being considered, the brigade has its 155-mm battalion, reinforced by a battalion from the FA brigade. The brigade commander and his FSCOORD decide to dedicate a battery to one of the teams in each of the two leading task forces. The DS battalion commander still has one of his own batteries and the entire reinforcing battalion to support the remainder of the brigade. The FSCOORD recommends that the dedication of the two batteries begin immediately to support movement of company teams.

Fire Support Planning. The

FSCoord at brigade must insure that fires are planned on targets of interest to the brigade as a whole. Close air support will be used to attack moving targets, massed enemy armor, and fortified positions against which other fires have little effect. Field artillery fires are planned on likely indirect fire positions and on likely enemy overwatch or reserve assembly areas in the brigade zone.

□ Positioning of Fire Support

CAS. The FSCoord recommends ground alert status for CAS. Two aircraft will prepare to assume air alert on call.

FA. In this case—since a meeting engagement is likely and bounding overwatch is expected to begin at the LD—the FSCoord moves the two batteries that will be dedicated into position as near the LD as minimum range permits. In this way, the batteries will have time to harden their positions prior to the beginning of the operation. Had the movement to contact begun with units in traveling or traveling overwatch, the dedicated batteries would have followed behind leading company teams but would not have occupied firing positions until just before bounding overwatch began. The remaining battery of the DS battalion and the reinforcing battalion's batteries also occupy firing positions just behind the LD. They will "leapfrog" forward as the movement progresses so that at least two of the four undedicated batteries will always be in position to fire. The supporting countermortar radar will be positioned to cover areas from which enemy mortar fire is expected.

□ Coordination

Fire Support Coordination Measures. The FSCoord insures that all brigade elements have the corps FSCL and recommends establishment of a brigade coordinated fire line (CFL) approximately 5 km ahead of leading elements. In this case,

the CFL is tied to the phase lines used to coordinate the maneuver movement. As leading elements approach each phase line, the CFL is shifted to the next.

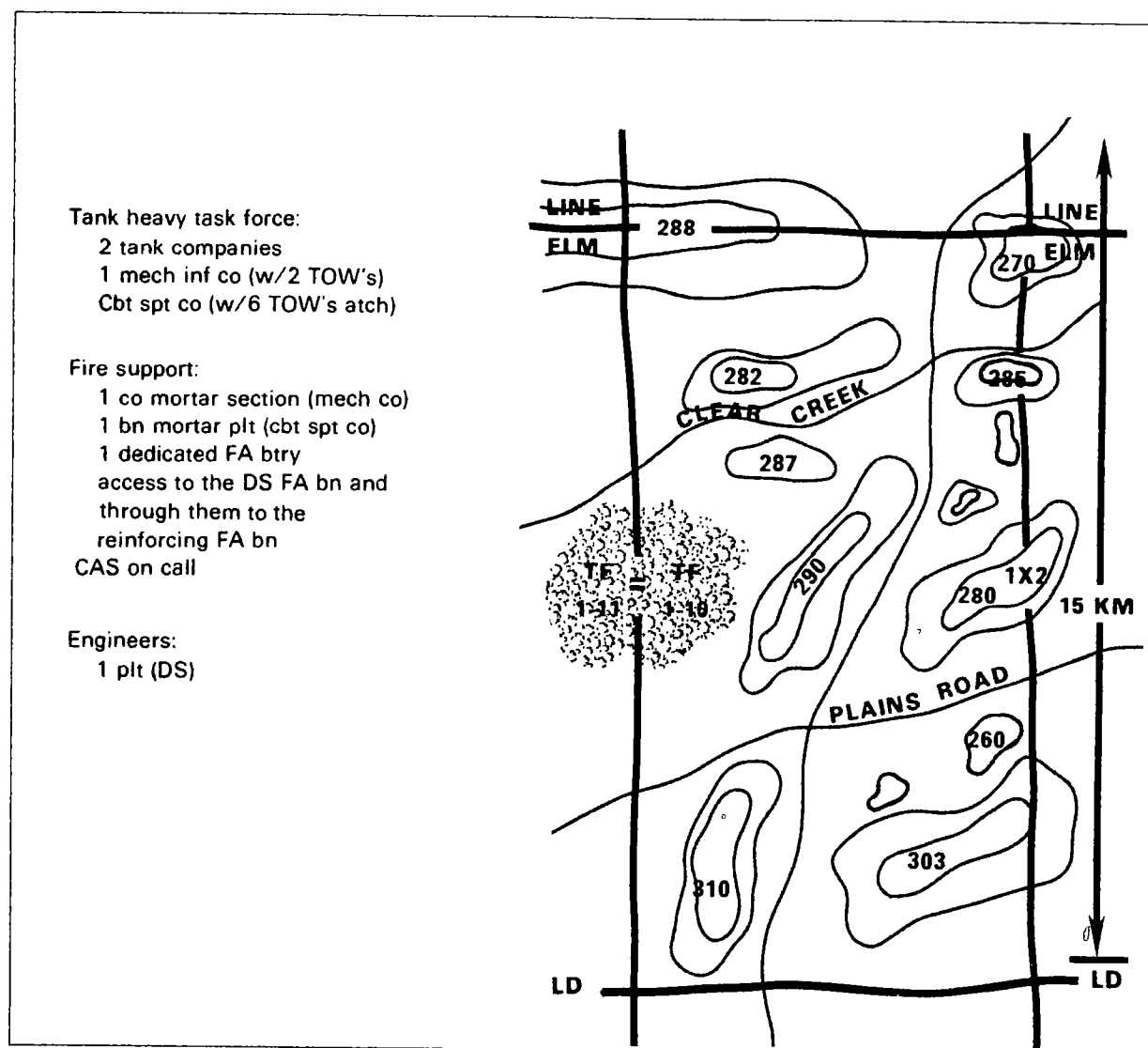
Adjacent Units. The FSCoord exchanges plans with the 2d Brigade FSO and the armored cavalry squadron FSO.

Smoke. The battalion FSO briefs FIST chiefs on availability of FA and mortar smoke ammunition. When company teams plan smoke to screen movement or obscure enemy vision, FSCoord's insure that the smoke does not interfere with activities of adjacent units or obscure the vision of anticipated CAS aircraft.

Since this is a movement to contact situation, immediate obscuration and suppression of enemy positions is paramount. The FSO advises the FIST chiefs to use mortar smoke (WP) for a rapid buildup of obscuration because mortars have a high rate of fire. FA smoke (HC) should be used to sustain smoke on a target requiring longer obscuration because HC lingers and burns longer than WP.

4-8. How to Support a Battalion Task Force Moving to Contact

TF 1-10 Armor, as part of 1st Brigade, has the mission to attack to penetrate Line ELM in zone and be prepared to continue the attack or assist passage of 3d Brigade elements in zone (fig 4-9). Intelligence indicates the task force will encounter scattered security forces shortly after the task force crosses the line of departure. The commander will attempt to bypass or destroy those isolated elements and continue rapidly to his objective. The generally open and rolling terrain in his zone permits rapid movement and excellent observation, but good cover and concealment is limited. For this mission the task force has available the following major assets:

FIGURE 4-9. TF 1-10 ZONE.

The task force commander analyzes his mission and wargames courses of action with his S3 and FSO. He decides to attack with two tank heavy teams leading and the third tank heavy team following. The lead teams will move out in bounding overwatch posture, capitalizing on terrain to conceal their movement.

With his FSO the TF commander discusses fire support to be planned not only to

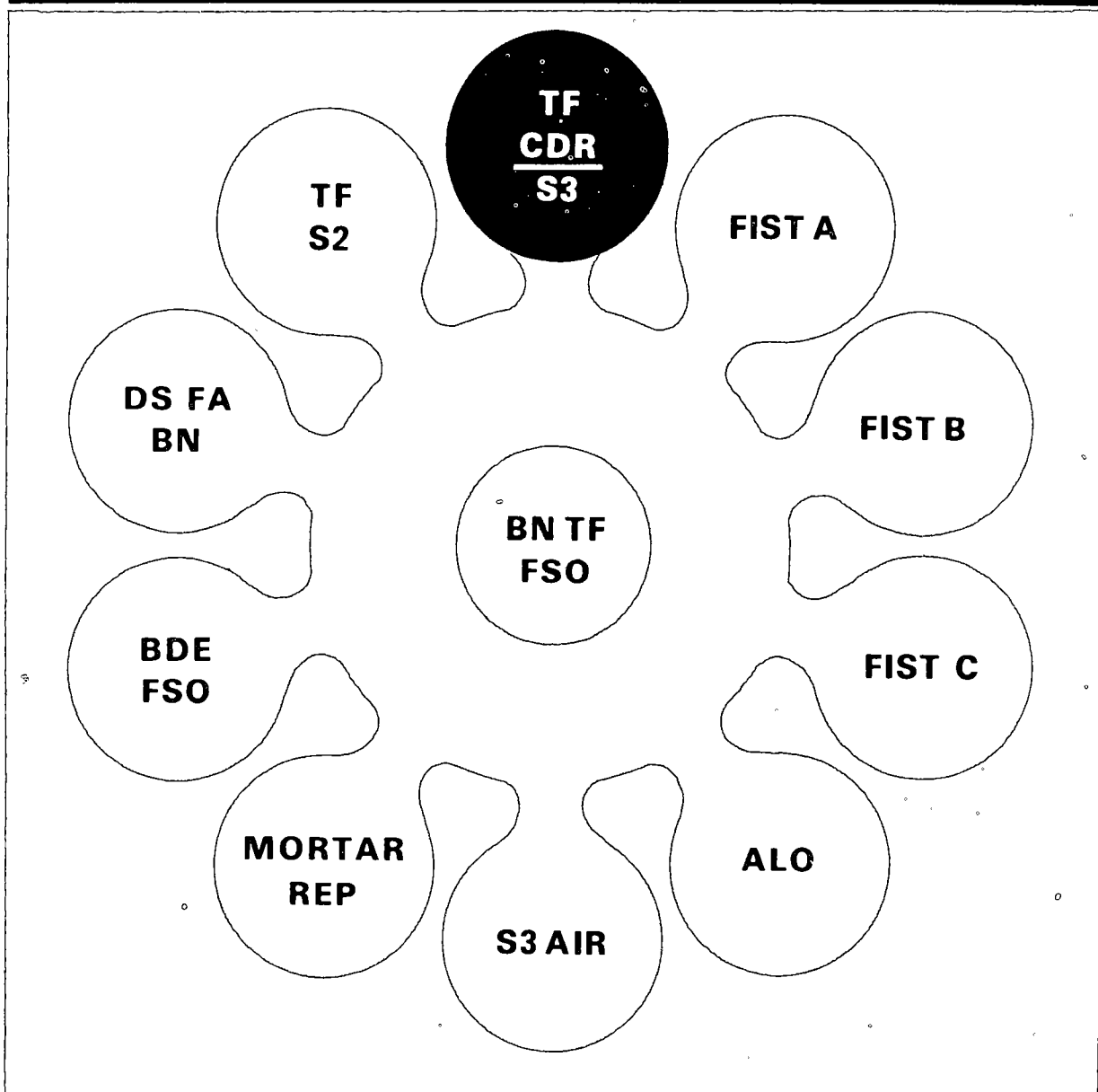
suppress likely enemy positions, but also to screen movement of bounding elements with smoke where terrain does not provide good concealed routes. The commander also anticipates the requirement for company hasty attacks and possibly a battalion hasty attack en route to his objective. He directs massed fires be planned on Hill 290 as well as Hill 287 and Hill 285 where he most expects these hasty attacks to occur.

The commander and FSO also determine other targets deemed critical to the force to provide a framework for the remainder of the battalion fire support plan. These targets and those planned by company teams will be given target numbers allocated to the task force. The numbers will be disseminated to subordinate elements and fire support units.

The TF commander will also designate checkpoints for maneuver reference and control. These, too, will be disseminated to subordinate elements.

The FSCoord at maneuver battalion level is the battalion FSO. In the planning and coordination of fire support he deals closely with several agencies (fig 4-10).

FIGURE 4-10. COORDINATION OF FIRE SUPPORT BY BN FSO.



In the movement to contact, the FSO is especially concerned with insuring that each leading team has immediately responsive fire support and planning fires to support the task force as a whole. Specific fire support tasks include:

- Prepare to rapidly augment the fires of the dedicated battery and the battalion mortars when contact is made.
- Use smoke to obscure enemy observation and/or screen friendly movement.
- Plan fires on likely enemy positions or assembly areas deep in the battalion zone.

Organization. Since one of the two leading teams (Team B in our example) has a dedicated FA battery, the battalion commander and the FSO decide to place the battalion mortar platoon in direct support of the other lead company. This gives each of the leading companies immediately responsive fires.

The battalion also has access to the fires of the other four nondedicated batteries that support the brigade.

Planning. The FA dedicated battery fires will be planned by the B Team commander and the FIST chief based on guidance from the TF commander and the FSO. The battalion FSO monitors and records targeting data as the FIST chief transmits it to the dedicated battery FDC on the FA battalion CF or dedicated F net. If the FIST chief uses a more secure means, he must insure that the fire plan reaches his battalion FSO who will perform normal fire support coordination and pass the plan to the DS battalion FDC.

In particular, the battalion FSO must anticipate action required after contact is made, and the battalion commander moves into the hasty attack. The FSO plans fires to support hasty attack contingencies as well as fires on likely enemy locations and reserve positions, and obscuring fires to support the battalion. When these targets essential to the task force have been added, the FSO and the task force commander establish target designations and distribute the information.

Positioning. The dedicated battery is positioned by the DS FA battalion CO. The battalion mortars—now DS to Team A—are positioned by the mortar platoon leader to focus their fires on Team A's advance.

Coordination. The battalion FSO is a vital link in the support of a movement to contact. He must insure that each forward team—whether it has a dedicated battery or not—has access to immediately available fire support. Teams that have no dedicated battery should designate an adequate number of on-call targets. FIST chiefs should designate targets on which nondedicated batteries, or battalion mortars, can lay their tubes when not engaged in firing other missions.

For a company team that has a dedicated battery, the battalion FSO must

- closely monitor the activities of the FIST chief working with the dedicated battery;
- constantly examine the tactical situation for the possibility of another company being committed around the initial company, which may change the requirement for a dedicated battery;
- keep the DS battalion FDC informed when a change is expected; and
- inform the dedicated battery FDC of maneuver element movements when it does not receive the information directly.

After the battalion commander, S3, and FSO finish their major planning efforts, the commander moves to meet with his team commanders in their respective areas. While with Team B, he passes on the following guidance:

"Your team will move through the right portion of the task force zone in a difficult area. You have minimal cover and concealment so I am giving you a dedicated battery. Carefully plan obscuration and screening fires to conceal your movement. Insure that you coordinate closely with Team A on the left and let the FSO know your smoke plans that may impact on the task force to our right so he can coordinate that.

"I think your first significant contact may

occur in the vicinity of checkpoint (CP) 14 so, in addition to immediate suppressive fires, plan some on-call fires from the DS FA battalion there.

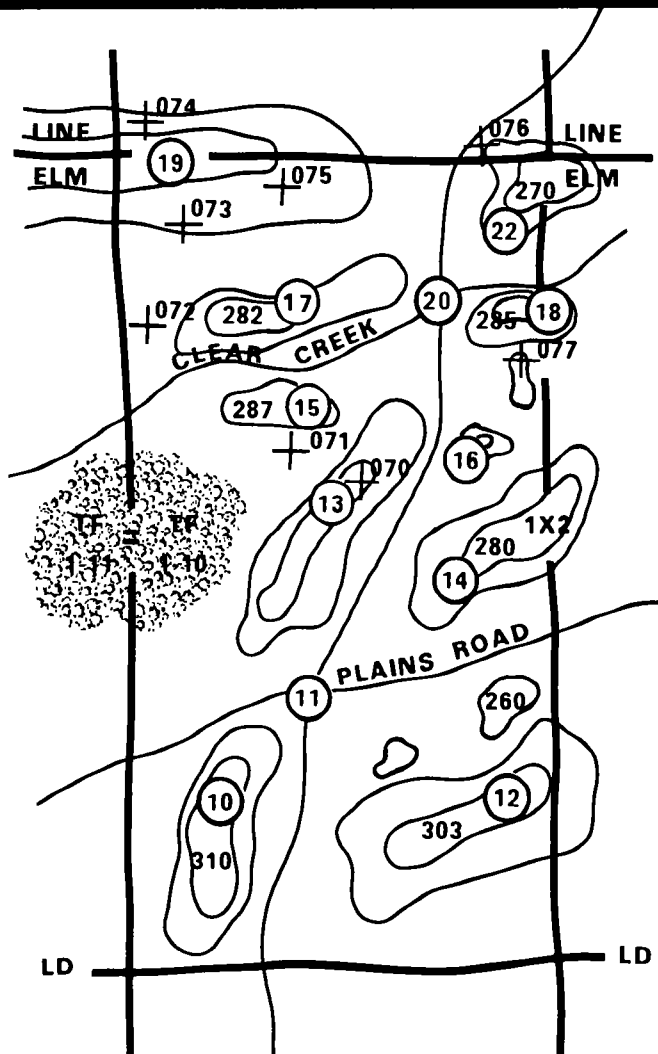
"The task force may have to conduct a hasty attack near CP 13 or CP 15. If so, be prepared to maneuver north of Clear Creek and west toward CP 17. We may also conduct a hasty attack near CP 18. From there you'll probably overwatch the

movement of Team A and Team C (mech) on to the objective.

"I've planned fires on Hills 287, 282, and 285 and along Line ELM to support our overall attack. Copy these targets and checkpoints (circled numbers) off my map (fig 4-11). You should plan your targets out to Clear Creek with the dedicated battery and make sure the FSO gets them, too.

FIGURE 4-11. TASK FORCE TARGETS.

"Once we reach Clear Creek the situation will probably have developed to require a battalion hasty attack. Since we will need more massed fires of several batteries or even battalions, the dedicated battery will probably be withdrawn. We will then revert to our normal DS FA relationship. If not, you can fill out your dedicated battery fire planning as you near Clear Creek."



4-9. How to Support a Leading Company Team Moving to Contact

The FSCOORD of company/team level is the FIST chief. His fire support contacts are as shown in figure 4-12. In a movement to contact situation he is primarily concerned with *providing immediate suppressive fires* to his team and with *planning to support the team's actions after making contact*. Specific fire support tasks are:

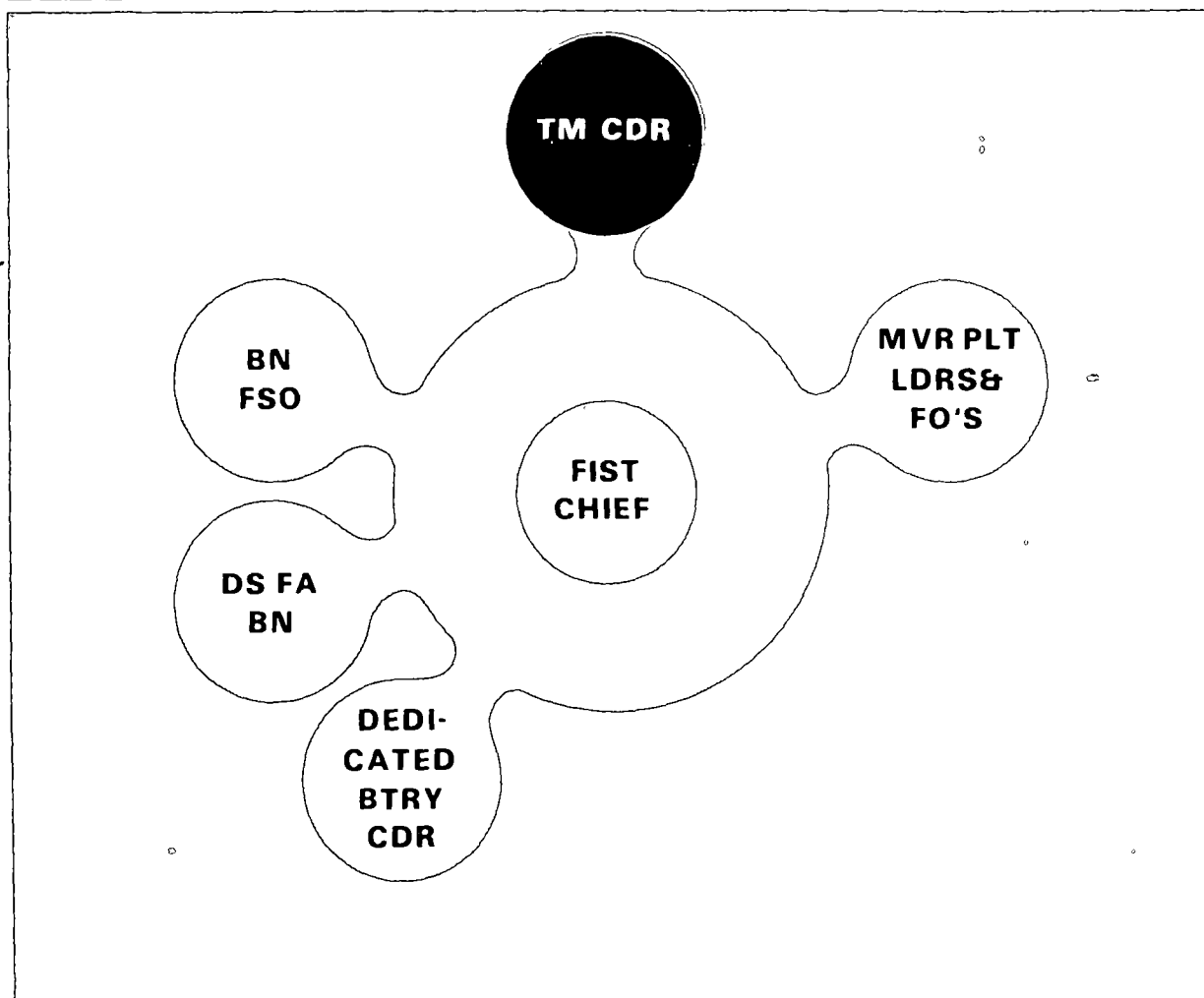
- Provide immediate HE and smoke fires to

suppress enemy direct fire weapons.

- Provide smoke to cover the team's movement.
- Attack targets of opportunity rapidly.
- Support the team's maneuver options upon contact (bypass, team hasty attack, fix, hasty defense).

In this case since the maneuver battalion mortars are DS to another company team, the immediate suppression will be furnished by the dedicated battery. Other fires will be planned by the FIST chief and delivered by the DS FA battalion.

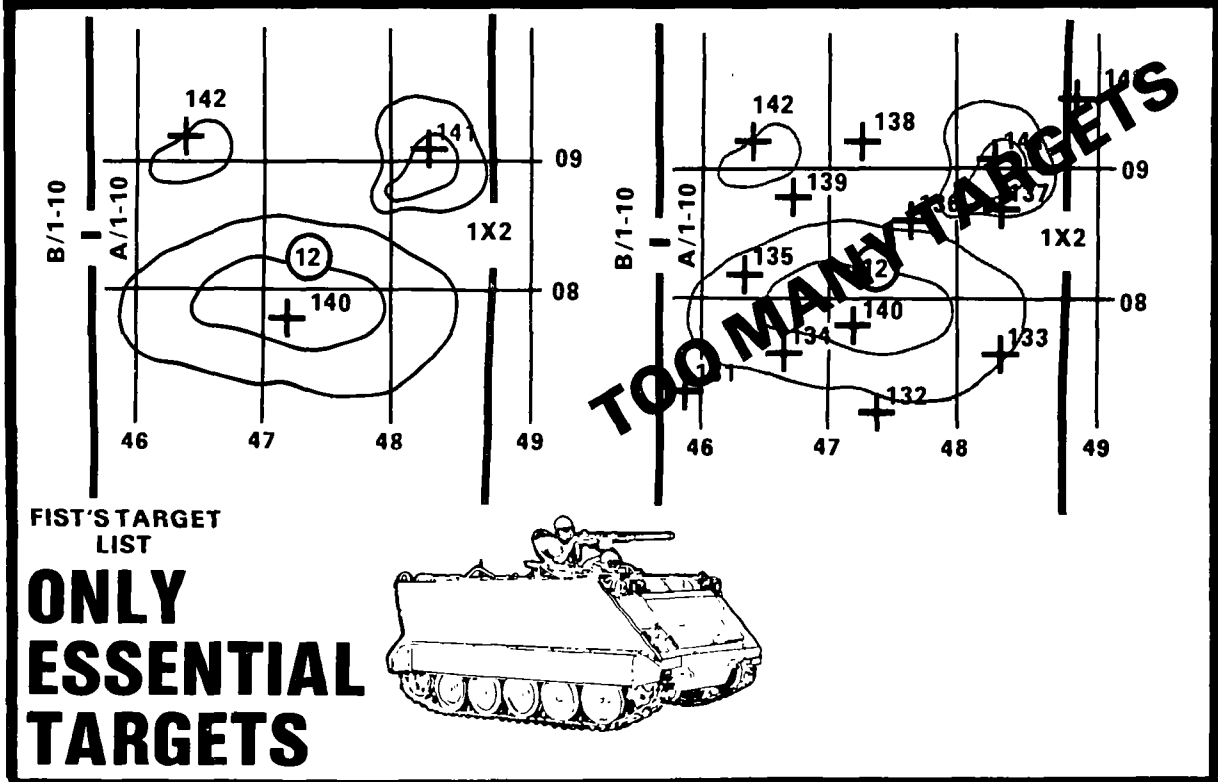
FIGURE 4-12. FSCOORD (FIST CHIEF) CONTACTS.



□ Fire Support Planning

The FIST chief has the primary role in planning the fires of the dedicated battery. He and the team commander study the route over which the team will move and identify those areas that would present the greatest threat if occupied by enemy direct fire

FIGURE 4-13. CO/TM FIRE PLANNING.



weapons. Suppressive fires are planned on those locations. Additional fires may be planned in areas where hasty attacks are likely. *Only essential targets are planned; too many planned targets may result in confusion and longer response time (fig 4-13).*

The team commander will then designate three targets as "priority targets." Each platoon (two guns) of the dedicated battery is laid on a planned priority target and should be able to fire within 20 seconds. As the maneuver unit advances, priorities are

redesignated at the company team's direction.

☐ The Gridded Thrust Line Method

The gridded thrust line is a method of rapidly passing targeting data and maneuver control measures (checkpoints and phase lines) when speed is essential and *limited security is acceptable*. For details on how to use this method see FM 6-40-5, *Modern Battlefield Gunnery*.

☐ Communications

If the fires of the dedicated battery are to be truly responsive, changes must be made in communications procedures. Normally the dedicated battery and its supported team are given a fire direction net for their exclusive use. It will be *monitored* by the battalion TF FSO and the battalion FDC—however, *no one* but the FIST and the dedicated battery will enter the net except in an emergency. Other FIST's in the task force will use the DS battalion CF, CF alternate, or another fire direction net for their fire planning. When one dedicated battery relieves another, the relieving battery enters the net using its own call sign.

When possible the planning of dedicated battery support will take place in a face-to-face meeting between the FIST chief, the team commander, and the dedicated battery commander. If such a meeting cannot be held, target list, priorities, and control measures (phase lines, checkpoints, etc.) will be sent by courier to the dedicated battery FDC. If radio communications must be used, secure means is preferred. An alternative is the gridded thrust line method to transmit target data and control measures. Battalion FSO's and DS battalion FDC's monitor the transmissions and record the data. Additionally, dedicated battery commanders are made aware of contingencies such as hasty attack, bypass, or hasty defense so that the battery can support these actions more responsively should they occur.

If the team moving to contact has mortars they will be echeloned forward, moving as necessary to cover the bounding platoons. The team mortars will be on the mortar fire direction net and the team command net.

The dedicated battery will also *monitor* the command frequency of the supported team. This allows the battery to

- ☐ follow the team's progress,
- ☐ anticipate its needs, and
- ☐ answer calls for fire directly from maneuver personnel.

The dedicated battery FDC will insure that *no* field artilleryman will *enter* this net unless requested to by maneuver personnel—and then he will get out of it as soon as possible.

☐ Organization

The team commander and the FIST chief must insure that they know the duration of the dedication of the FA battery. In this case, since the TF commander has directed that the initial movement from the LD will be by bounding overwatch, the battery will be dedicated when the operation begins. *The dedication will cease when the brigade commander releases the battery, probably when the battalion transitions into the hasty attack.*

☐ Coordination

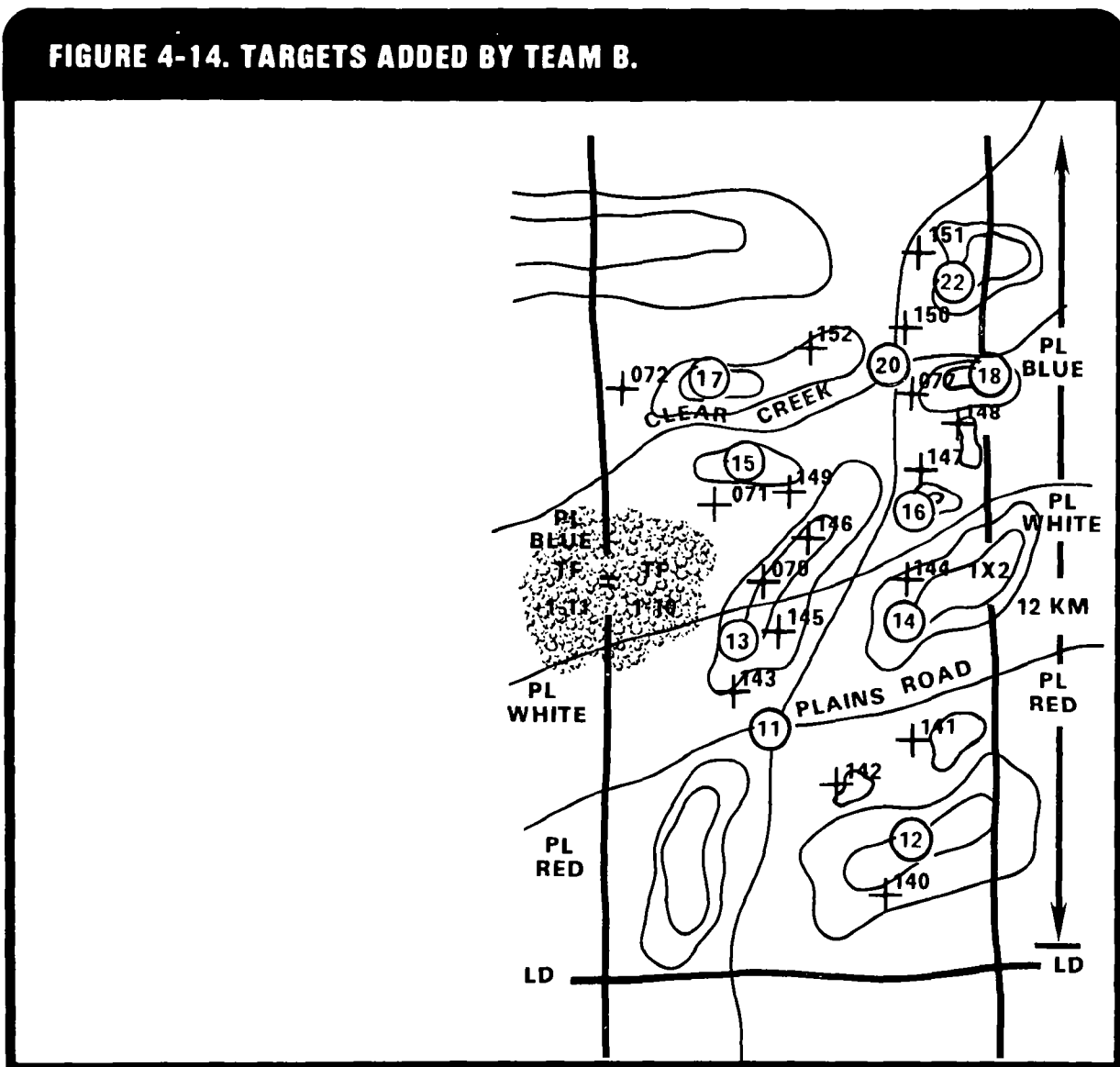
DS battalion commanders and S3's must anticipate the possible need to switch the dedication from one battery to another as a result of hostile action, range limitations, or changes in the scheme of maneuver. Such changes must be closely coordinated so that all required information is received by the relieving battery and dedicated support for the movement of the company team continues uninterrupted. If the lead changes between company teams, the battery must coordinate closely with the new team commander and FIST to provide current planned targets and make adjustments as required.

□ **Situation Continued (Team B Movement to Contact)**

As the team commander and FIST chief further analyze the situation, the dedicated battery commander arrives at the Team B CP. The team commander explains the scheme of maneuver to the battery commander, providing targets, checkpoints, and phase lines in the zone. He identifies

those targets that are to be covered by FA and indicates which ones are considered priority targets. The FIST chief will send changes in priorities to the battery as the team movement proceeds. The targets, checkpoints, and phase lines for this operation are shown in figure 4-14. (Recall that Targets 070, 071, 072, and 077 are among those planned by the battalion FSO before the battalion movement to contact began.)

FIGURE 4-14. TARGETS ADDED BY TEAM B.







"We will be leading with tanks all the way unless we run into an area where they begin taking effective ATGM fire. We must suppress likely ATGM positions en route. The first set of priority targets are 140, 141, and 142. After clearing PL Red priority shifts to 143, 144, and 145. As we hit PL White priority changes to 146, 147, and 148; the FIST chief will tell you the precise time to shift to new targets and keep you advised of any changes."

The team dedicated battery commander and FIST chief confirm frequencies, call signs, and the call for fire for suppressive fire targets. The battery will be monitoring the team command net (as well as the dedicated fire net) to respond to fire requests on that net if necessary.

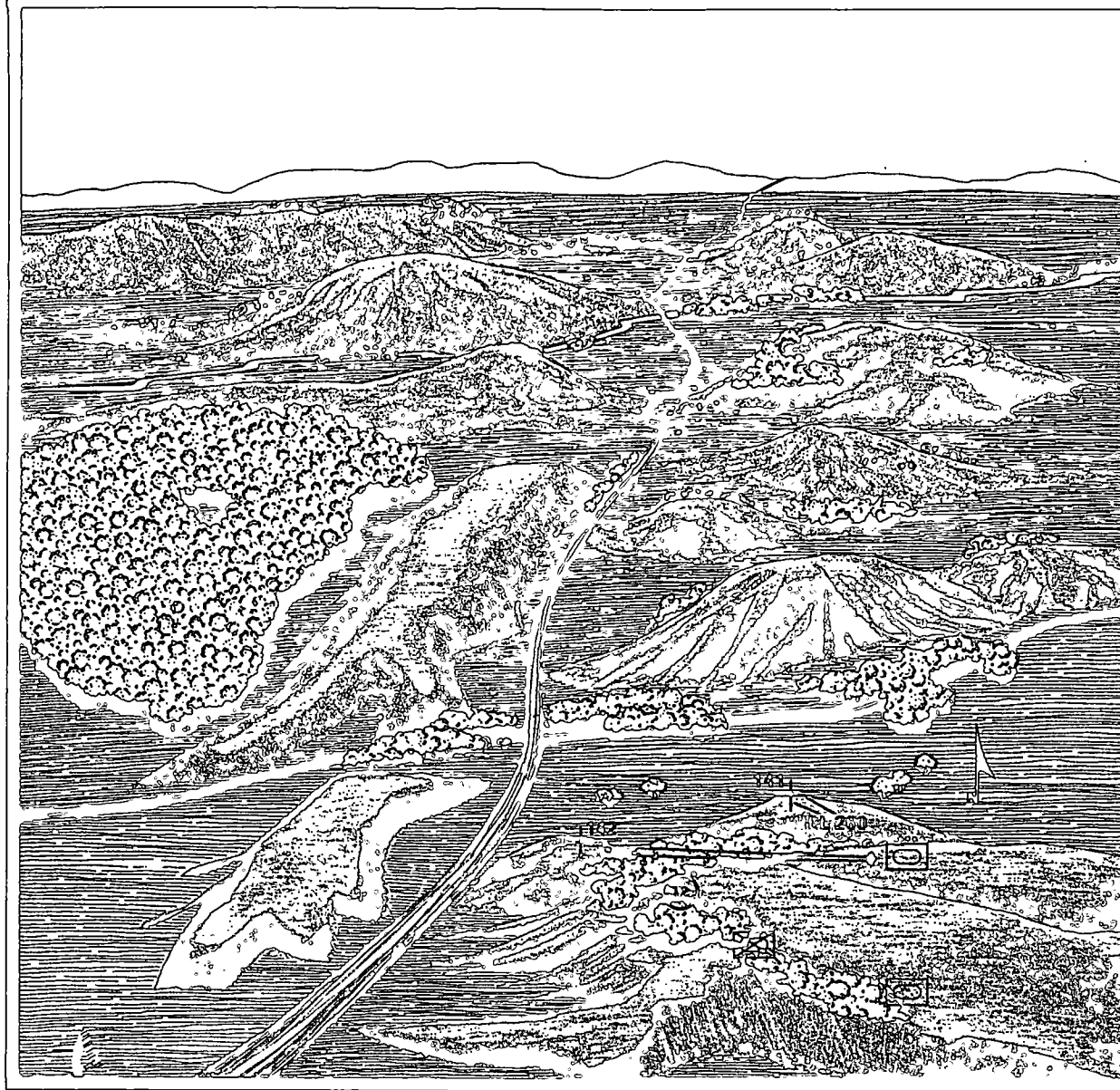
After this meeting the FIST chief finalizes the company team targets, passes them to the FSO, and disseminates them to the tank platoons and the mechanized platoon FO. He further insures that they have the proper call signs, frequencies, and call for fire format for dedicated battery fire.

One way Team B's movement might develop is as follows (fig 4-15): After moving to CP (12), dispersed elements of Team B (-) are prepared to overwatch 1st Tank Platoon's next bound to Hill 260.

The tank platoon begins moving to Hill 260 and en route receives fire from Hill 260 and the knoll to the west. As the tank platoon returns fire and moves quickly to cover, the FIST chief observes and rapidly calls, "Immediate suppression Targets 141 and 142." At the same time 2d Tank Platoon engages vicinity Hill 260. Mech platoon engages the knoll with machineguns. Dedicated battery fires land in 40 seconds. After receiving reports and evaluating the situation the team commander decides to fight through.

Enemy fire ceases, but the FIST chief calls directly to the DS battalion FDC to get additional fires to neutralize 141 and 142. The DS battalion has monitored FIST-dedicated battery communications and is quickly able to mass fires on the requested targets.

FIGURE 4-15. TEAM B'S MOVEMENT TO CONTACT.

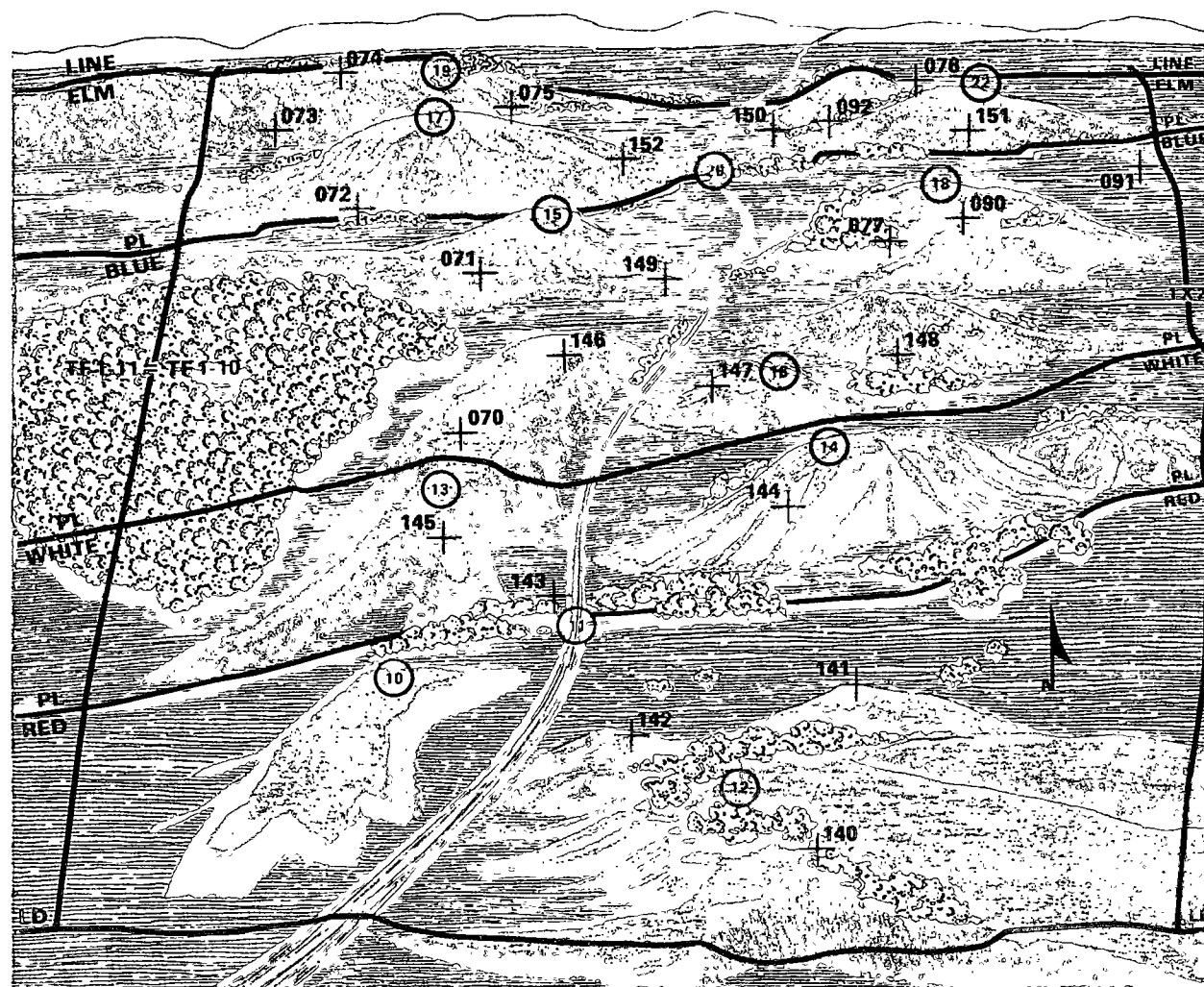


The team bypasses the knoll and assaults Hill 260 as fires continue on Targets 142 and 141. Fires on Hill 260 are shifted from Target

141 just ahead of assaulting forces. The team occupies Hill 260 and prepares to continue to the north.

FOLDOUT

TF 1-10 TARGET/CHECKPOINT OVERLAY



- In the movement to contact
- immediately responsive dedicated battery or battalion mortar fires were provided to leading company teams,
 - fires were planned for hasty attack contingencies,
 - smoke was planned to provide concealed approach routes, and
 - suppressive target priorities were shifted forward as the maneuver force advanced.

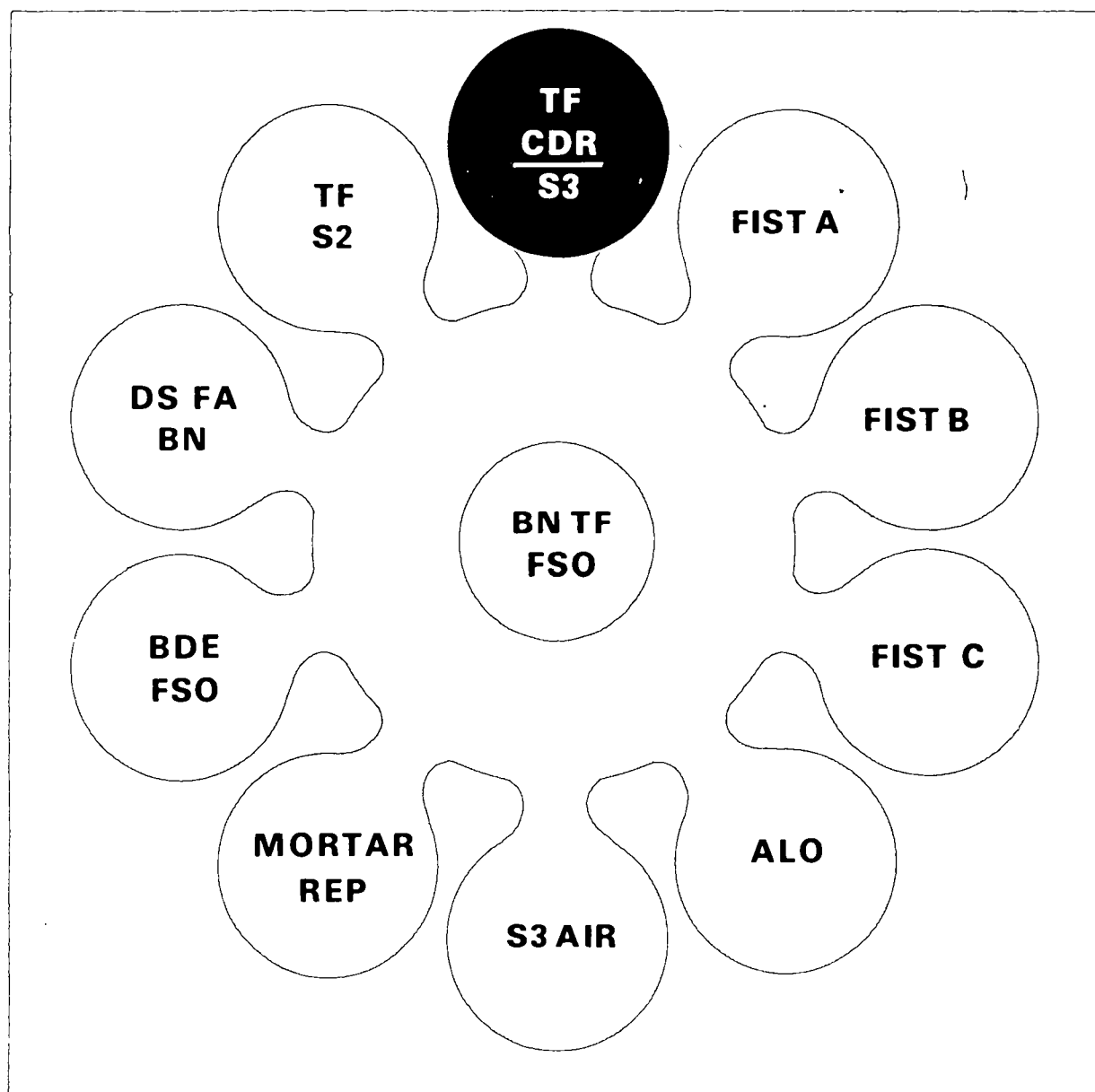
4-10. How to Support a Battalion Task Force Hasty Attack

NOTE TO READER: This illustration is the "master overlay" of all targets and checkpoints for the battalion task force hasty attack scenario. It should remain folded out for ready reference throughout the development of the scenario.

- Hasty attacks can develop
- when a moving force makes contact with an enemy element not known to exist or located in an unexpected position,
 - when a deliberate attack plan is modified after the attack starts,
 - at the conclusion of a deliberate attack when further advance is ordered, and
 - in the defense when a small unit counterattacks.

The primary concern in a hasty attack is to react quickly with fire and maneuver to maintain the momentum of the attack. The commander must *see* the battlefield to make a hasty assessment of the enemy situation, *suppress* the enemy's gunners, and *move* to exploit the enemy's weakness. If a hasty attack appears infeasible or does not succeed, it will be necessary to develop a deliberate attack as described in paragraph 4-11.

Hasty attacks develop quickly with little advanced warning or time for planning. The battalion commander and FSCOORD must be prepared for such contingencies. Tentative maneuver schemes and fire support integration must be wargamed and planned for each area of the battlefield where a hasty attack is likely to occur. This is a continuous process to insure that the task force is prepared to launch a hasty attack as quickly as possible when the need arises. *Fire support is one of the commander's most flexible means of rapidly concentrating*

FIGURE 4-16. TF FSO FIRE SUPPORT CONTACTS.

combat power in the hasty attack.

The battalion FSO's contacts in planning and coordinating fire support for a hasty attack are the same as in the movement to contact (fig 4-16).

☐ **Fire Support Assets**

Fire support available for the battalion

task force conducting a hasty attack normally includes

- ☐ battalion mortars (co mortars when mech co is present),
- ☐ access to the brigade's DS and reinforcing FA battalions, and
- ☐ access to the brigade's CAS sorties.

**FIRE SUPPORT PLANNING FOR THE
HASTY ATTACK IS A CONTINUOUS
PROCESS OF ESTIMATING, UPDATING,
AND INTEGRATING REQUIREMENTS
FOR FIRE SUPPORT TO MEET
UNEXPECTED BATTLEFIELD
CONTINGENCIES AND TO
COMPLEMENT THE HASTY
ATTACK PLAN.**

☐ **FSO Activities**

FSO's must insure that the following fire support tasks for the TF hasty attack are accomplished.

- ☐ Suppress enemy direct fire gunners with smoke and HE.
- ☐ Obscure the vision of enemy gunners and screen the movement of friendly attack elements with smoke.
- ☐ Mass fires on lucrative targets.
- ☐ Delay/destroy enemy reinforcements or counterattacking forces by firing on forces in assembly areas or moving to reinforce.

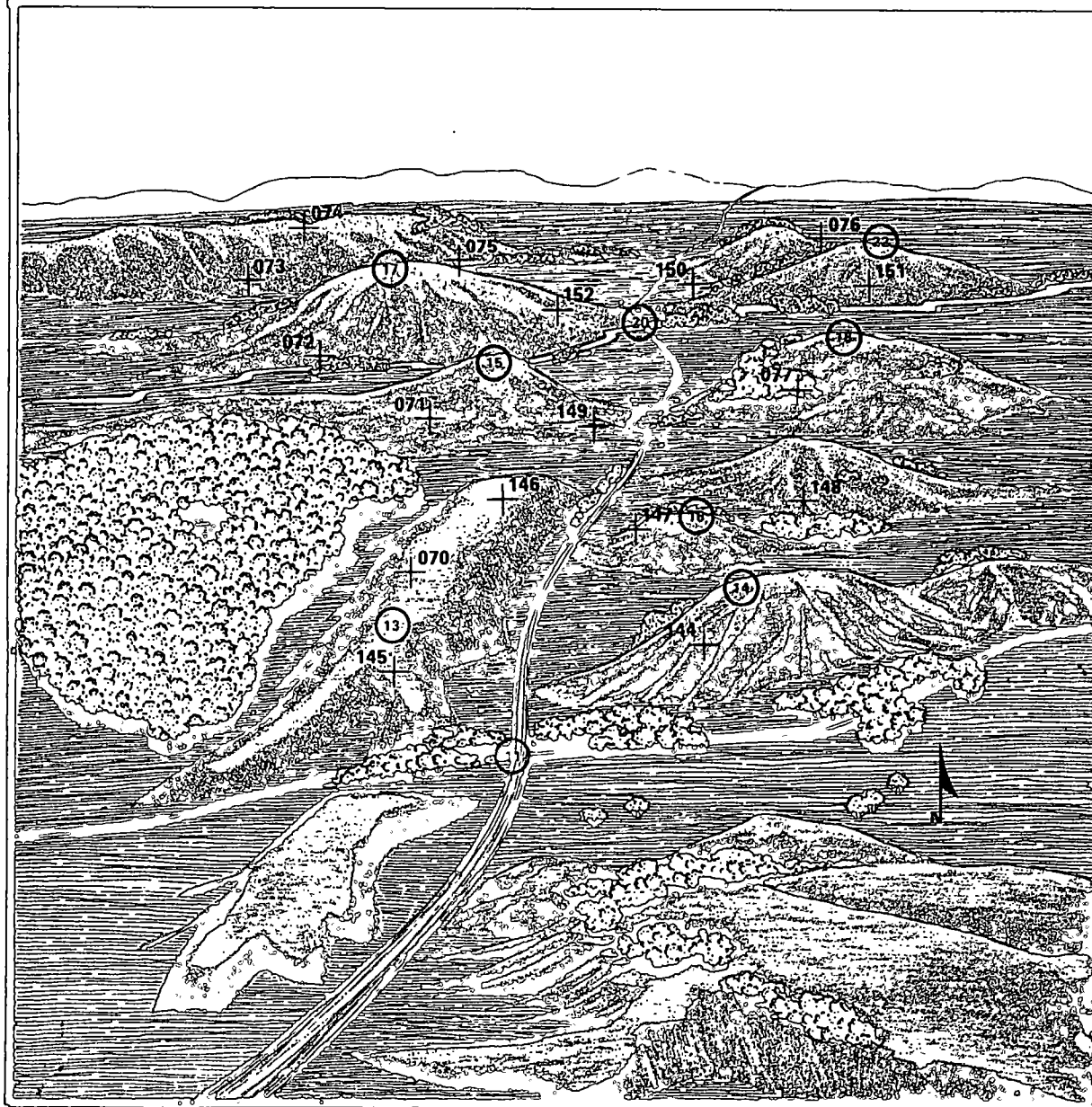
☐ **Fire Planning**

Planning fire support for hasty attack contingencies is a continuous process. It begins in the initial planning for the movement to contact when the commander identifies critical areas possibly requiring hasty attacks. As the situation develops and enemy strengths and dispositions become more apparent, plans are updated so that the FSO can rapidly assess the fire support situation and quickly integrate fires to complement the hasty attack plan. The FSO plans

- ☐ smoke and HE to suppress potential enemy overwatch positions,
- ☐ smoke to screen friendly movement, and
- ☐ HE or DPICM on likely assembly areas, chokepoints, or other locations where reinforcing threat forces may be located.

Mortar fires are planned for suppression, smoke, and illumination missions. Although CAS sorties may not initially be allocated down to TF level, the FSO working closely with the S3 and the ALO, constantly attempts to anticipate the need for CAS. Airborne FAC's may not be able to directly control airstrikes due to the enemy air defense environment. In such cases, the FSO must have selected FIST members prepared to augment the ground FAC's at critical locations where airstrikes are anticipated.

FIGURE 4-17. FIRES PLANNED FOR TEAM B MOVEMENT TO CONTACT.



□ Situation Continued

During initial planning for the *task force* movement to contact, the commander identified two likely hasty attack areas, one north of CP (13) and another south of CP (18). Because the situation was relatively vague at that time, only a limited number of targets

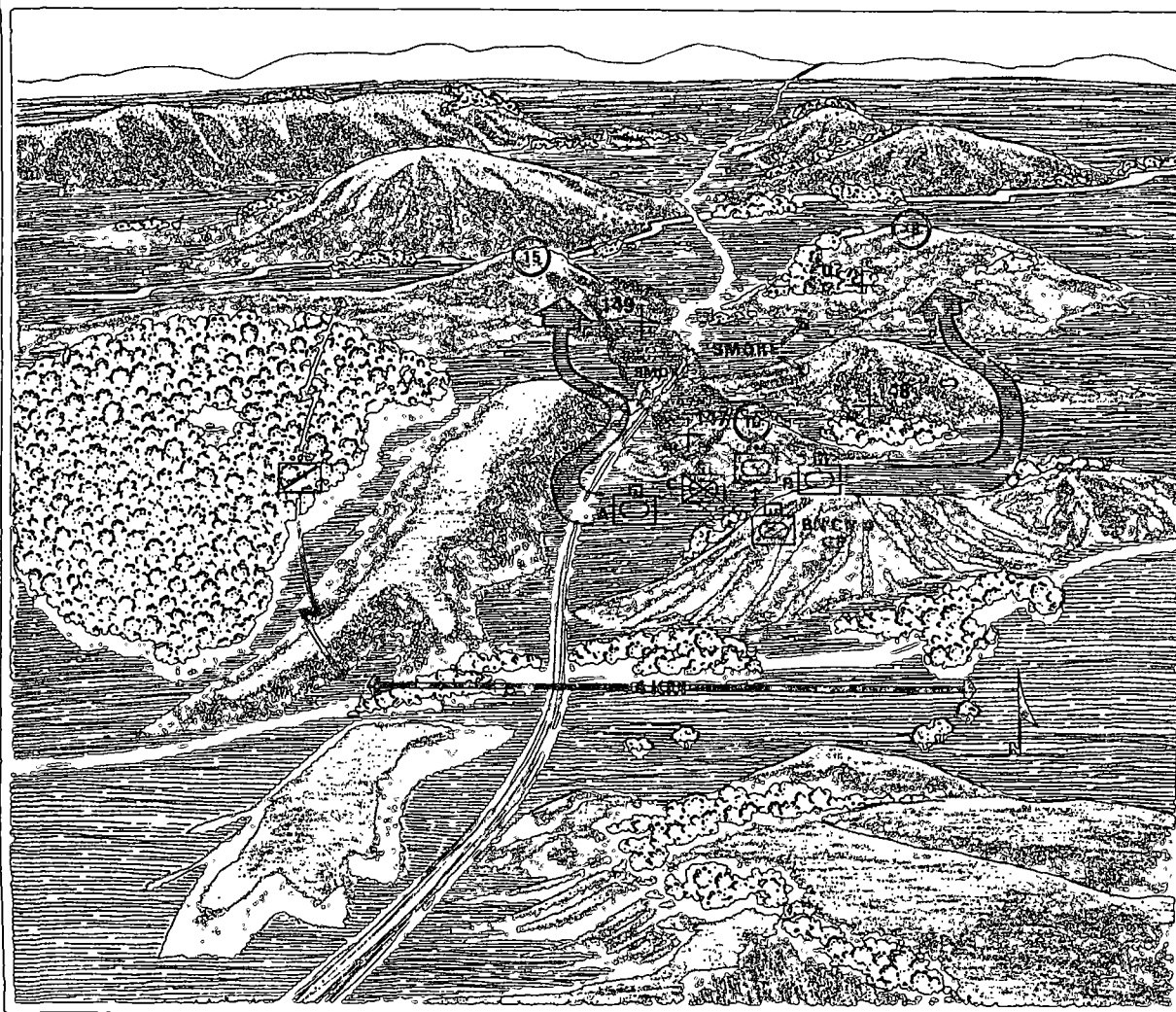
were planned. Those targets inserted by the battalion FSO during initial planning for the movement to contact as well as those added by Team B are as shown in figure 4-17. Battalion targets are numbered 070-077; team targets 140-152.

As the advance continues, TF 1-10 Armor, organized into three tank-heavy teams, has just destroyed an enemy unit on the hill at CP (16). The TF is ready to continue the advance to the north against scattered resistance (fig 4-18). The TF commander decided to move Team A west of the road and then on to CP (15). Team B moves north along the east side of the hill toward CP (18). The mortar platoon will stay in position behind CP (16) and answer calls for fire from either Team A or Team B.

Because of heavy activity in TF 1-11's sector to the west, the DS FA battalion commander recommended, and the brigade commander approved, termination of Team B's dedicated battery. Fires planned during dedication, however, were monitored by the DS battalion FDC and are available for use by any of the TF 1-10 FIST's.

The FSO contacts the DS battalion FDC and plans a 10-minute smoke screen 600 m long to conceal Team A's movement across the open area to CP (15). Team B FIST chief calls for smoke on 148 and 077.

FIGURE 4-18. TASK FORCE 1-10 MOVEMENT TO CONTACT CONTINUED.



Team A moves toward CP (15) under cover of the smoke screen controlled by Team A's FIST chief. Team B begins bounding to CP (18). As the smoke dissipates, both advancing teams begin receiving heavy AT and machinegun fire from the woodline near CP (18). Both teams return fire and Team A's FIST calls for suppressive fires (mortar smoke and HE) on Target 077. In spite of the suppression, the enemy continues to place effective fires on the advancing teams.

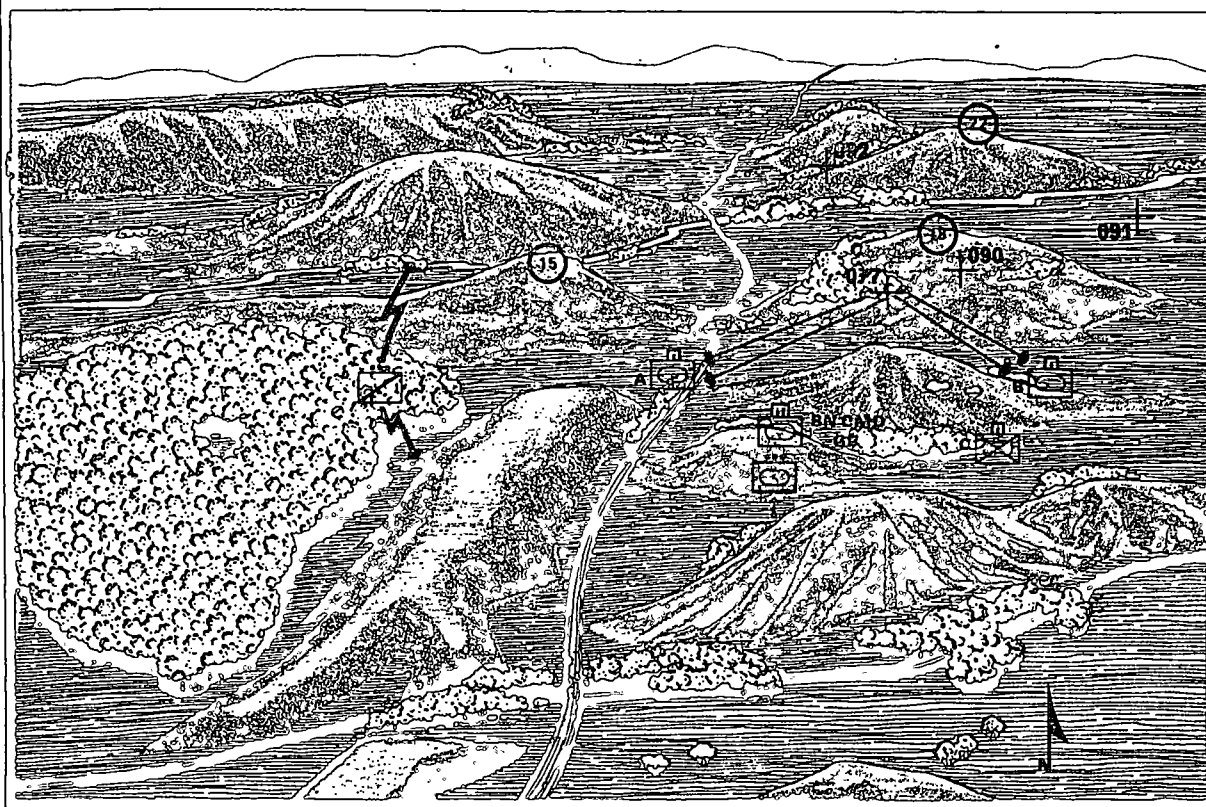
The TF commander decides to conduct a hasty attack against what he believes to be a reinforced enemy platoon near CP (18). He decides to envelop from the east around CP (18) with Teams B and C. As the TF 1-10 hasty attack develops, the commander reports the situation to 1st Brigade and requests priority of FA fires. He also advises that his ALO is requesting air alert for a close

air support mission to be used against expected armor reinforcements coming from the northeast. To insure that the attack is adequately supported, the FSO:

- arranges to use FA to continue the smoke and HE on Target 077 to suppress enemy direct fire gunners,
- plans on-call Target 090 (near CP (18)) for later use in the objective area,
- plans on-call Targets 091 (east of CP (18)) and 092 (west of CP (22)) to disrupt any enemy reinforcement attempts,
- coordinates the new planned targets with all FIST chiefs, and
- coordinates with the ALO to insure that the airstrike is integrated with other fire support.

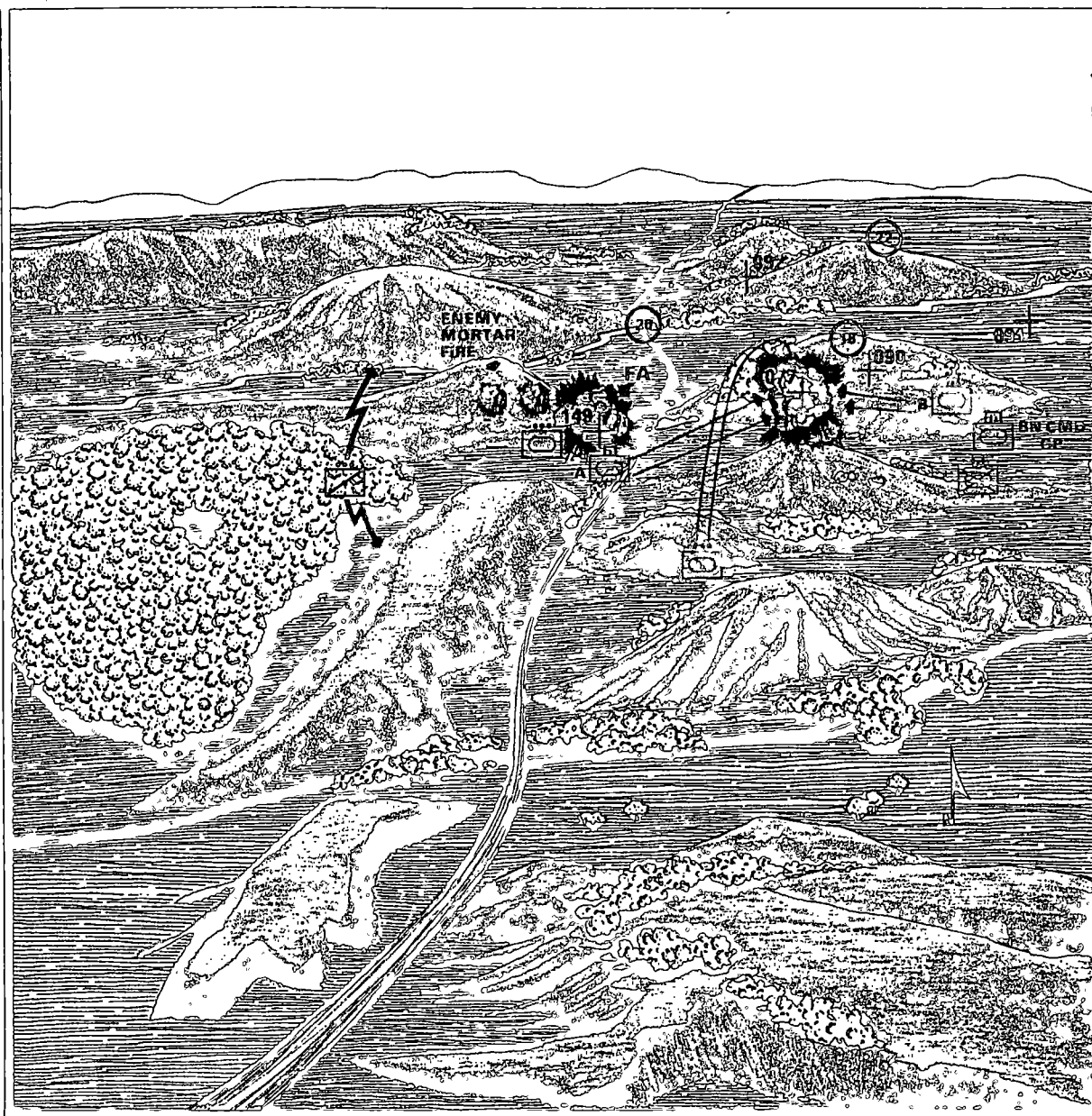
The plan for the hasty attack and newly planned targets are as shown in figure 4-19.

FIGURE 4-19. TF 1-10 HASTY ATTACK PLAN.



mortars begin falling on Team A significantly interfering with the team's ability to move and aim direct fires. The Team A FIST chief requests "immediate counterfire" through the DS battalion FDC to silence them.

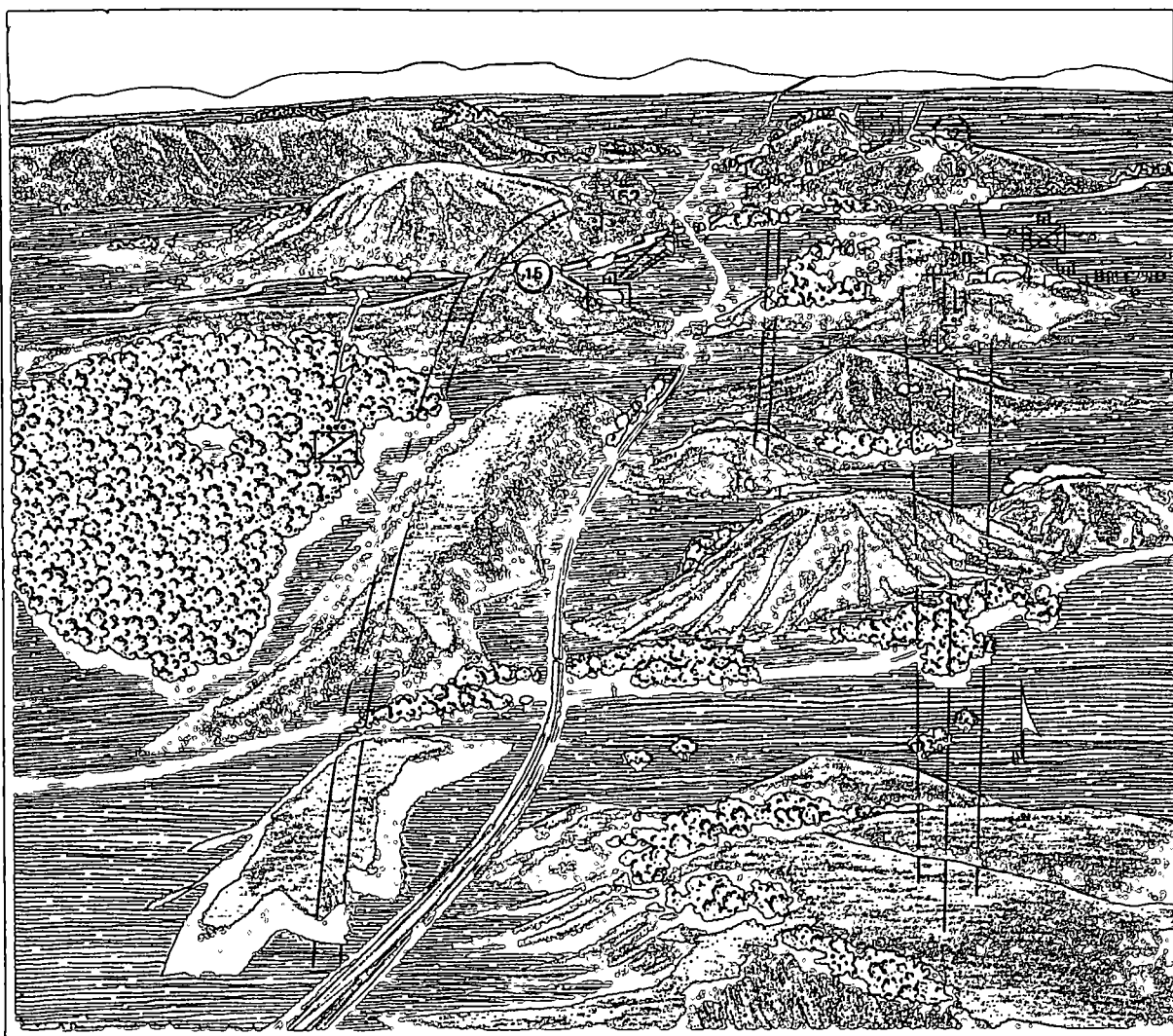
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As the attack proceeds (fig 4-21) Team B shifts the mortars from Target 077 to Target 150. A platoon FO from Team C adjusts company mortars (on the company mortar FD net) on Target 090 and shifts the fires

northwest as the team approaches 090. The Team C FIST chief has called for FA HE and smoke on Target 151 to suppress light fire from that vicinity and obscure enemy vision from that vantage point.

FIGURE 4-21. COMBINED FIRES OF TF 1-10 HASTY ATTACK.



The battalion FSO calls for and adjusts smoke around Target 152 to further isolate the attack area. Team A adds to the suppressive fire with tank fire from the hill vicinity CP 15 toward CP 20 and Target 150. An FAAO team working for the DS FA battalion detects an enemy reinforcing

element of about 10-12 tanks moving southwest about 1,000 meters northwest of CP 22. The close air support mission previously requested to attack such a unit is still about 10 minutes out. The battalion FSO monitors the FAAO report of this enemy movement and requests the DS FA battalion

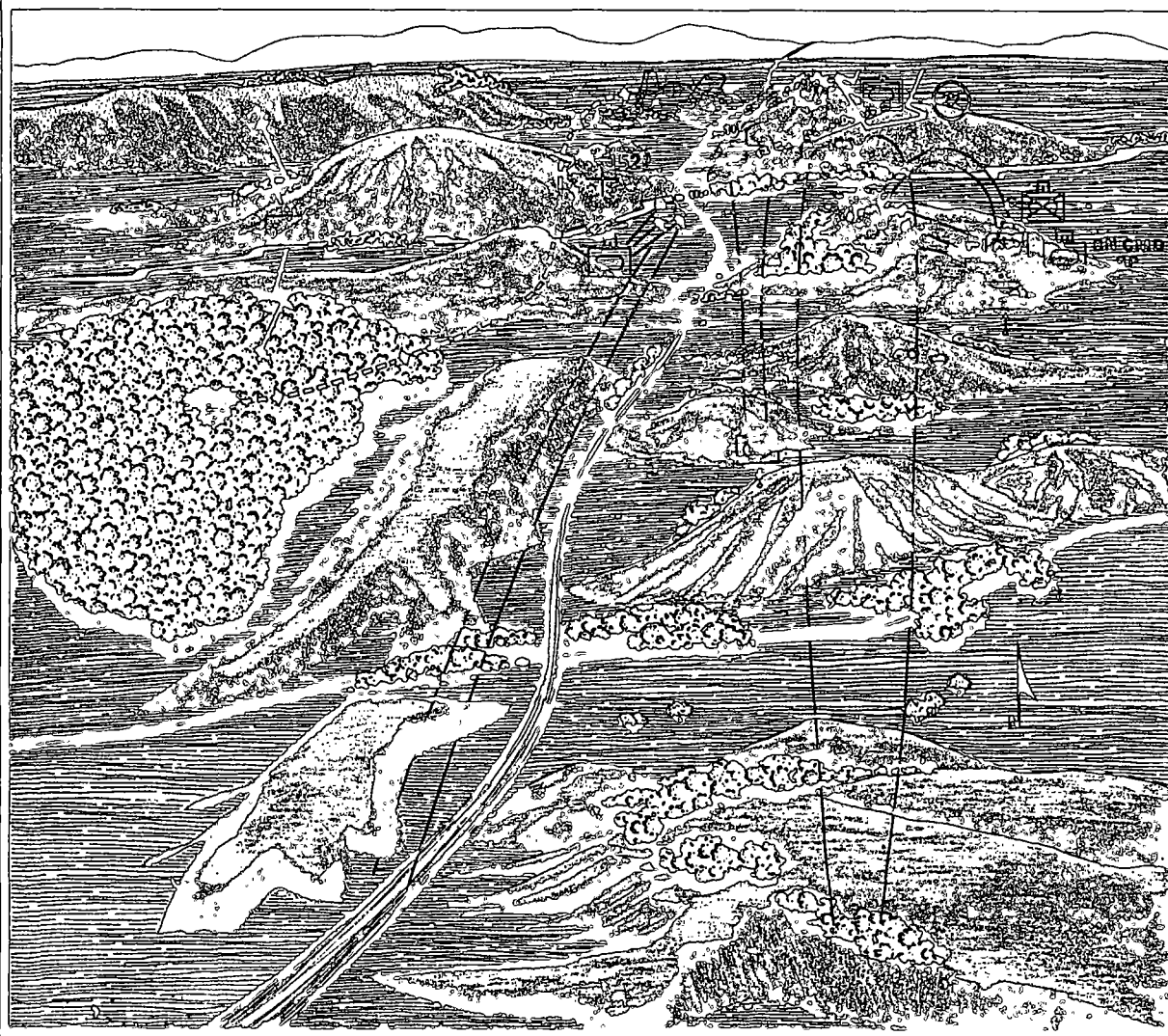
prepare to fire all available FA HE-VT and DPICM on the column. The FAAO team will control the mission.

The AO observes the column hugging the hill behind CP (22) and begins his mission by requesting one battery volley 500 meters northeast of Target 092. It appears that the column will pass between the wooded area (near Target 092) and the hill. Based on this judgment, the AO calls for an on-call volley from another battery 400 meters east of Target 092. The AO continues to adjust the

two batteries along the route of movement of the tank column causing tanks to button up and slow down significantly. (Previous smoke and dust from HE continue to obscure vision from vicinity of CP (22) and Target 152.)

Fires continue on the intercept point until aircraft begin their approach; the FAAO team identifies the target for the aircraft. As the aircraft strike begins, the AO shifts FA 400 m to the south. He *does not stop FA* (fig 4-22).

FIGURE 4-22. TASK FORCE COORDINATION OF GAS AND FA.



The division main FSE, with input from corps, has identified enemy air defense targets requiring suppression for this mission. The division FSE passes these targets to div arty, which fires the suppression missions in close coordination with the movement of the aircraft. The brigade ALO and brigade FSO work together to feed aircraft movement information to div arty to insure that the right targets are suppressed at the right time.

The aircraft complete their strike, destroying eight tanks; the remainder withdraw. During this time, Teams B and C have moved through CP(18), destroying enemy elements.

The task force prepares to continue the attack to the north to exploit its success. The battalion FSO shifts FA, HE, and smoke northeast of Target 152. Team A continues the attack toward CP(19) as Teams B and C move toward CP(22). Team A successfully gains CP(19) and destroys the enemy mortar platoon east of the hill while Teams B and C occupy CP(22).

In the hasty attack:

- Fire support planning began early and was updated as the situation developed.
- Fires planned for the dedicated battery were used by TF after dedication was terminated.
- Smoke was employed to screen the advance of Team A.
- CAS aircraft were alerted as the attack began and in conjunction with FA effectively stopped a reinforcing tank column.
- Immediate counterfire was used to silence enemy mortars.

□ Situation Continued

While the TF 1-10, 1st Brigade, hasty attack was underway, TF 1-11 on the left ran into similar resistance. Elements of the 1st Brigade were also confronted with *increased resistance* and the *momentum of the attack was significantly slowed*. Based on this situation and additional intelligence, the division commander decided to take time to

more fully develop the situation and conduct a deliberate attack. Supporting a division deliberate attack is discussed in paragraph 4-11.

4-11. How to Support a Division Deliberate Attack

Deliberate attacks are normally conducted by division or higher units. A force may be required to conduct a deliberate attack when it

- encounters a strong enemy force in prepared defensive positions from the LD/LC, or
- is confronted with a major obstacle that cannot be breached with smaller unit hasty attacks.

When a deliberate attack is conducted, *time* is taken to carefully reconnoiter the area, gather detailed information on enemy forces and dispositions, and prepare detailed maneuver, fire support, deception, and electronic warfare plans.

Deliberate attacks concentrate forces and fires to *create a hole* in the enemy defenses and then rapidly push forces through to secure deep objectives in the enemy's rear area. *Well timed and coordinated fires must coincide with maneuver to negate enemy weapons effectiveness, isolate the penetration area, and fix enemy forces in place.* The commander will set priorities for suppression of targets and target areas.

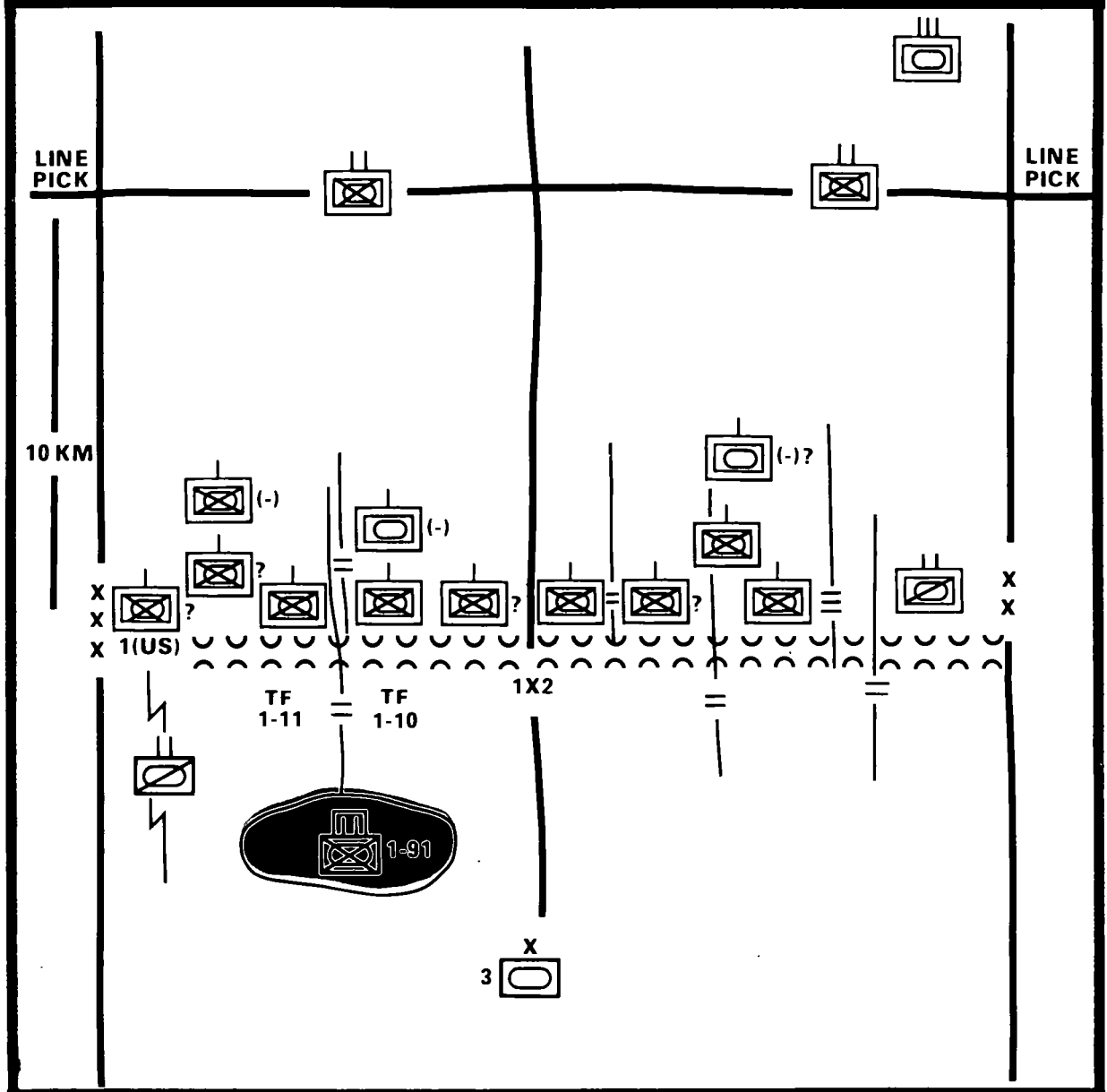
The FSCOORD insures that indirect fires and close air support are immediately available and responsive to maneuver needs. Suppressive fires will include massive use of *FA* and *mortar HE* and *smoke* to help gain momentum in the attack. Once the penetration is accomplished, heavy suppressive fires are planned on either side to assist the penetrating force to secure deep objectives.

□ **Supporting a Division in the Deliberate Attack (*Example*)**

In the example in paragraph 4-7, the US 23d Armored Division was attacking as a part of the I Corps offensive. As a result of increased enemy resistance and additional

intelligence on enemy strengths and dispositions, the division commander, with approval from corps, has decided to conduct a deliberate attack to penetrate prepared defenses and continue to the north. Current disposition of the 23d Armored Division and known enemy units are shown in figure 4-23.

FIGURE 4-23. THE 23D ARMORED DIVISION DISPOSITIONS AND KNOWN ENEMY UNITS.

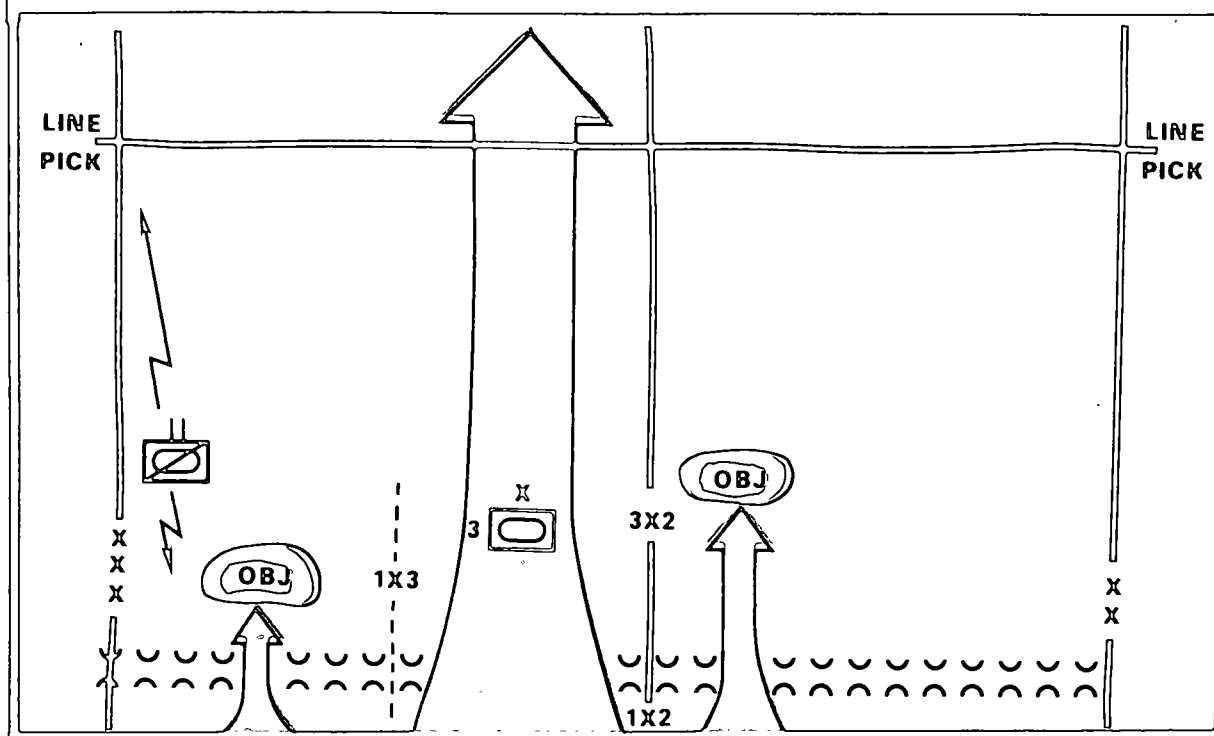


The division's current mission is to attack to penetrate enemy positions on Line PICK and prepare to continue the attack or assist passage of the 24th Armored Division and follow and support the 24th Armored Division.

The division commander and his staff carefully evaluated the situation and options available. The weakest point in the enemy defense appears to be in the right portion of the 1st Brigade zone. In this area, the division is opposed by a widely dispersed motorized rifle battalion reinforced with tanks. Their positions are about 2.5-3 km deep. The second defensive echelon is about 10 km from the LD/LC and consists of widely scattered motorized rifle elements reinforced with tanks. Primary reinforcements are elements of enemy division's tank regiment north of Line PICK and east of the 1st Brigade zone.

After wargaming the course of action to determine the best way to attack, the commander refined his plan to provide the best application of the division's combat power. He will pass the 3d Brigade (three tank battalions and two mechanized infantry battalions) through 1st Brigade to break through on a 6-km front in the main attack to penetrate Line PICK. The 1st Brigade will support the passage and conduct a limited objective attack to fix enemy forces on the left flank to hold the left shoulder. The 2d Brigade will conduct a limited objective attack to fix enemy elements in zone and hold the right shoulder. The division cavalry squadron, attached to 3d Brigade, will follow 3d Brigade lead elements through the hole and move out to protect the left flank. The 1st Brigade will then follow and support 3d Brigade. A sketch of the division attack plan is shown in figure 4-24.

FIGURE 4-24. DIVISION ATTACK PLAN.



□ Commander's Concept for Fire Support

The division commander furnished the following concept to the FSCOORD:

"I want to concentrate as much fire support as possible to assist the 3d Brigade in their penetration. We've got a pretty good idea as to how his defenses are laid out, and it will be no surprise that we're coming, so let's soften up those positions before the 3d Brigade hits them. After the penetration, flank protection is paramount en route to Line PICK—3d Brigade will need heavy suppression as they advance, particularly on the east. Use our air carefully. Air priority goes to hitting enemy tank reserves. Elements of the enemy tank regiment northeast beyond Line PICK pose the greatest threat to our success. Watch for them."

□ FSCOORD Activities

The FSCOORD for the division is the div arty commander. From the wargaming of possible courses of action, and the commander's guidance, he was able to formulate the following division-level fire support tasks for the deliberate attack.

- Weaken enemy defense in the main attack zone. This will probably mean a preparation to be fired either on schedule or on call.
- Suppress key enemy forces to isolate and protect friendly forces making the penetration.
- Mass fires on critical locations after the attack has begun.
- Neutralize or destroy enemy reinforcing or counterattacking units.
- Degrade the effectiveness of enemy indirect fire.
- Suppress enemy air defense systems when required.

□ Fire Support Assets

Corps has distributed 88 CAS sorties per day to the division for the attack. No naval gunfire support is available. The division has

priority of nonnuclear fires from the corps Lance units. The division has its organic artillery battalions (three 155-mm SP, one 8-in SP) and has the same artillery brigade with which it moved to contact before (two 155-mm SP, one 175-mm SP, and one 8-in SP).

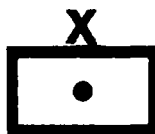
□ Organization of Fire Support

CAS. The FSCOORD recommends that division retain control of 48 sorties and distribute 28 to 3d Brigade for the main attack and 12 to 2d Brigade for the supporting attack. This breakdown weights the main effort, provides adequate air for the supporting attack, and retains sufficient sorties at division to further weight the main effort or assist the 1st Brigade in its follow-and-support mission.

FA. There are several options available for organization of FA for the deliberate attack. All must result from changes to the organization for movement to contact. Recall that FA organization for the movement to contact was:



- 1 - 50 FA (155-mm SP) DS 1st Bde
- 1 - 51 FA (155-mm SP) DS 2d Bde
- 1 - 52 FA (155-mm SP) GSR 1-51 FA; o/o DS 3d Bde
- 1 - 53 FA (8-in SP) GS (2d priority to 1-22 Cav)

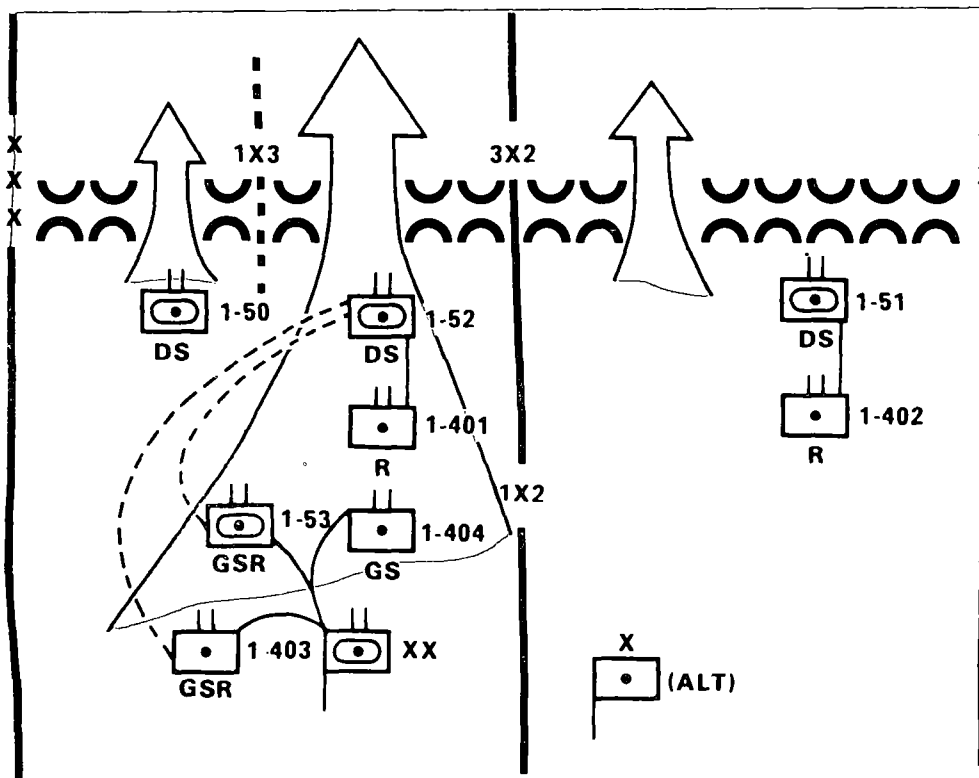


- 1 - 401 FA (155-mm SP) R 1-50 FA
- 1 - 402 FA (155-mm SP) R 1-51 FA
- 1 - 403 FA (8-in SP) GSR 1-50 FA
- 1 - 404 FA (175-mm SP) GS

OPTION 1

- 1 - 50 FA (155-mm SP) DS 1st Bde
(1st Bde remains committed)
- 1 - 51 FA (155-mm SP) DS 2d Bde
- 1 - 52 FA (155-mm SP) DS 3d Bde
- 1 - 53 FA (8-in SP) GSR 1-52 FA

- 1 - 401 FA (155-mm SP) R 1-52 FA
- 1 - 402 FA (155-mm SP) R 1-51 FA
- 1 - 403 FA (8-in SP) GSR 1-52 FA
- 1 - 404 FA (175-mm SP) GS
- FA bde HQ - Div arty alternate



OPTION 1

NOTE: DIAGRAM SHOWS MISSION
RELATIONSHIPS, NOT
POSITIONS.

This option gives 3d Brigade (the main attack) two directly responsive FA battalions (1-52 and 1-401 FA) and two GSR battalions (1-53 and 1-403 FA) to support its attack.

Advantages: Retains habitual relationship between brigade and DS battalion commanders. Leaves div arty free for counterfire, SEAD, and other general

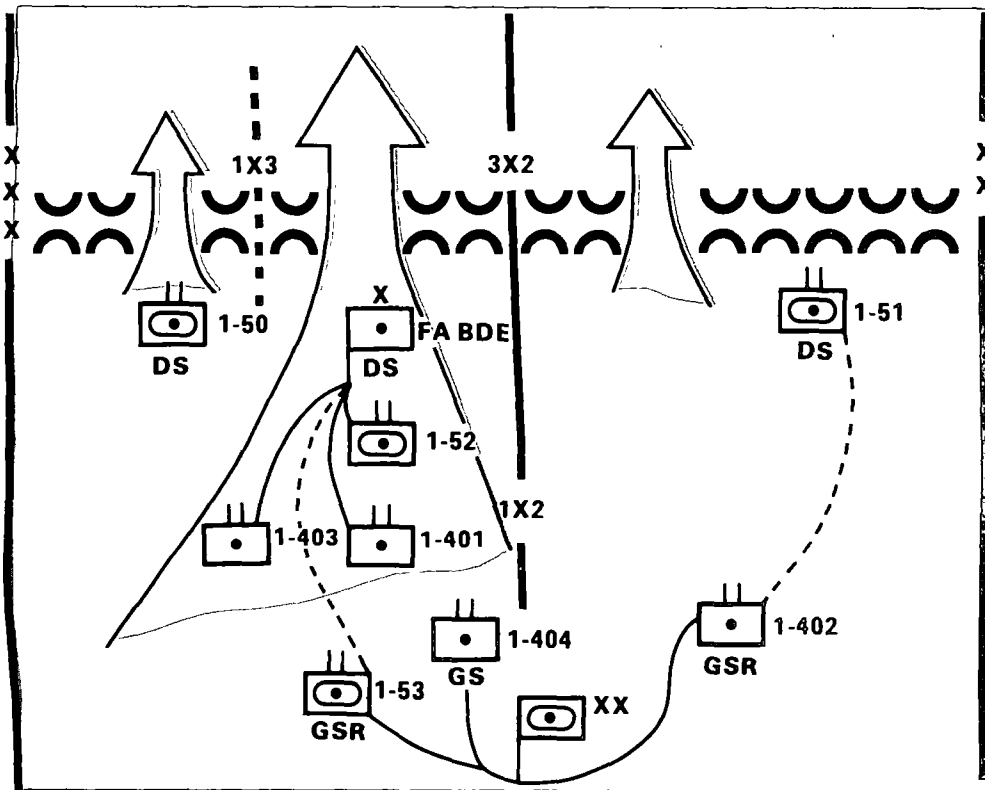
support tasks.

Disadvantages: Makes inefficient use of the FA brigade HQ. Strain on DS battalion increases as the number of maneuver battalions in the main attack brigade increases. (In this case, there could be as many as six battalions in contact as the attack develops.)

OPTION 2

- 1 - 50 FA (155-mm SP) DS 1st Bde
- 1 - 51 FA (155-mm SP) DS 2d Bde
- 1 - 53 FA (8-in SP) GSR FA Bde
- 1 - 402 FA (155-mm SP) GSR 1-51 FA
- 1 - 404 FA (175-mm SP) GS

- FA bde - DS 3d Bde
- 1 - 52 FA (155-mm SP)
- 1 - 401 FA (155-mm SP)
- 1 - 403 FA (8-in SP)



OPTION 2

NOTE: DIAGRAM SHOWS MISSION RELATIONSHIPS, NOT POSITIONS.

This option gives the 3d Brigade three directly responsive FA battalions and a headquarters to control them.

Advantages: FA brigade has command and control facilities to do the job—good use of FA brigade HQ. Leaves div arty free for counterfire, SEAD, and other general support tasks.

Disadvantages: Alters habitual relationship between 3d Brigade and its DS battalion.

☐ **FA Organization for Combat Option Selected**

In this case there is a large number (six) of maneuver battalions in the main attack, an FA brigade HQ is available, and there is time for the 3d Brigade commander and the FA brigade commander to plan the employment of fire support. Therefore, option 2, an FA brigade in DS to the 3d Brigade, is selected.

□ Fire Support Planning

Division level fire planning will be done in the division main FSE. In our example case the division commander has accepted the FSCoord's recommendation that a 10-minute preparation (including CAS and FA fires) be scheduled from H-5 to H+5.

Preparation length is usually determined by the division commander based on the recommendation of his FSCoord. The FSCoord's recommendation is based on

- number of targets;
- damage desired to each target;
- number of firing units (including FA mortars, and CAS, when available);
- rate of fire; and
- availability of ammunition.

The Preparation. The preparation is an intense volume of prearranged fire used to soften enemy defenses before an attack. A preparation may be held on call or delivered at a predesignated time and in accordance with a prearranged time schedule. The force commander decides whether a preparation is warranted based upon the recommendation of his FSCoord. Factors that influence the commander's decision include the following.

- Will the effect gained offset the loss of surprise?
- Have enough profitable targets been located to warrant a prep?
- Are the fire support resources available?
- Can the enemy recuperate before the fires can be exploited?

A preparation is normally phased to permit successive attacks on certain types of targets. The first phase attacks hostile fire support means and observation systems. The second phase targets command posts, communication facilities, assembly areas, and reserves. The final phase softens and suppresses first echelon defensive positions and other immediate threats. Preparations are normally planned by brigade or a higher echelon. Fires normally start before attacking elements cross the LD (H—hour) and may continue after they have crossed.

The role of the FSCoord in the

preparation is to insure the coordinated attack of all targets considered critical by the maneuver commander at his echelon. He will do that by recommending what types of targets are attacked by which fire support means during each phase of the preparation. He must answer some hard questions: Will CAS be used in all phases of the preparation or will it be saved for phase II communications centers and armored reserves? Should NGF (when available) be scheduled in the preparation or used only against deep targets after the preparation is over? How will the DS battalions' fires be coordinated with the GSR and GS battalions' fires in the FA portion of the preparation? (The FSCoord at division must insure that the preparation is timely and coordinated and that all targets are attacked effectively; yet he probably does not wish to *dictate* to the DS FA units exactly *how* their fires are to be planned.) All these questions must be answered by the FSCoord who—after consultation with the maneuver commander—will give each fire support agency its "mission" for the preparation.

As an example, a 10-minute preparation will begin at H-5.

FA. Div arty TOC will schedule all GS and GSR battalions. FA fires will begin at H-5. Concentrate on phase I targets and phase II targets north of the DRY Creek. All div arty units will fire phase III targets from H+3 to H+5 between BR 623609 and 626578. Coordinate all targets within brigade zones with DS units. Div arty leave one FA battalion free to schedule SEAD fires from H-1 to H+5, targets to be furnished by FSE NLT 141300Z.

CAS. Strike to neutralize Targets AF 401 and 468 (local tank reserves) from H+1 to H+5.

Field Artillery Fire Planning. In this case the division commander has directed that div arty coordinate the planning of the FA preparation. The FA brigade (as the 3d Bde's DS unit) will schedule the fires of its three battalions and will focus attention on targets in the penetration zone. Div arty will

plan the fires of the GS and GSR battalions and will be particularly concerned with counterfire targets, command and control centers, and fires on large troop concentrations deeper in the zone. If the FA portion of the preparation is to be *effective*, however, the division and all brigade fire plans must be coordinated—and div arty has been tasked to do this.

Fires During the Attack. Fires to support 3d Brigade units in contact and the suppression fires to the flanks of the brigade as it moves to the objective will be planned and controlled by the FA brigade DS to the 3d Brigade.

Fires on the Objective. In this case the 3d Brigade must *also* break through the enemy's *second* defensive belt. Fires will be required to assist this second penetration; however, its exact location will not be known until the brigade is well into its attack. In this case the division FSCOORD has directed that the div arty TOC plan and place "on call" fires very similar to a preparation. Div arty will have to begin planning these fires on each of several possible breakthrough zones in the second defensive belt. Targeting information will come both from division and corps sources and from the brigade FSO. This will allow the FA brigade to keep its attention focused on the direct support of the 3d Brigade, and yet insure that appropriate planning effort goes into the "preparation" at the second defensive belt.

Counterfire. Div arty will manage the counterfire effort throughout the operation. Known enemy indirect fire means will be targeted and attacked during the preparation. After that, fires on all enemy artillery will be planned as a part of the div arty counterfire program. If and when the enemy's indirect firing hampers the attack, all of or portions of the counterfire program can be executed immediately.

SEAD. The FSCOORD recommends the same procedure for fires against enemy air defense weapons. Known locations will be attacked during the preparation. Subsequent attack may be made on enemy air defense

units to support CAS and attack helicopter operations. Targets will be furnished by the Air Force combat intelligence center (CIC), corps all-source intelligence center, and division all-source intelligence center.

Close Air Support. Division will use eight of its preplanned sorties during the preparation to strike located tank reserves. All available aircraft will be employed against the enemy division tank regiment believed to be located beyond Line PICK when locations are confirmed.

☐ Positioning

Following the commander's guidance, the assistant FSCOORD and G3 air at the division main CP arrange to have CAS aircraft integrated into the attack. The ALO reports that one A-7 and one A-10 squadron will be supporting with 24 aircraft committed to the operation. Times are established for individual flight strikes based on projected maneuver movement. Ordnance will be loaded for the threat, approximately 50 percent antiarmor Maverick and Rockeye, and the remainder GP bombs and CBU.

The FSCOORD recommends that the FA brigade's battalions be placed well forward during the night before the attack, and that they have priority of positions in the lateral band 3-6 km behind the FEBA. He indicates all batteries will be in place when the prep begins at H-5.

☐ Coordination

Corps has established an FSCL to expedite the attack of targets by CAS beyond that line. The division FSCOORD recommends that the division consolidate brigade CFL's (2 km forward of the LD) into a division CFL to expedite attack of targets beyond the CFL by mortars and FA. (At H-hour, the 3d Brigade CFL will shift to a line just short of the second enemy defensive belt.)

The division FSCOORD also recommends that division FSE clear all FASCAM fires to insure missions requested by one unit do not

interfere with the mobility of other attacking forces.

In the division deliberate attack example:

- The FA brigade was used in direct support of the brigade making the division main attack.
- The planning of the FA portion of the division preparation was coordinated by the div arty TOC.
- An on-call "preparation" was planned to aid penetration of the enemy *second* defensive belt.
- CAS was targeted primarily against enemy tank reserves.
- Brigade CFL's were consolidated into a division CFL to facilitate target attack through the division zone.
- Div arty managed counterfire for the entire operation.

4-12. How to Support a Brigade Deliberate Attack

Returning to the example attack, 3d Brigade (division reserve in the movement to contact) will execute the division main attack through 1st Brigade to penetrate Line PICK and prepare to continue the attack or assist passage of the 24th Armored Division. The 3d Brigade will be concentrated on a narrow front so that it is opposed by elements of a reinforced motorized rifle battalion in the first echelon and a reinforced motorized rifle company in the second echelon. The enemy division's major antitank reserve is located about 10 km beyond Line PICK near the 2d Brigade and 3d Brigade boundary. The 3d Brigade zone has good covered and concealed routes, yet provides sufficient opportunities to exploit range capabilities of direct fire weapons. Effective overwatch positions can be established throughout the zone; however, the right portion is more heavily wooded initially, partially restricting observation and movement.

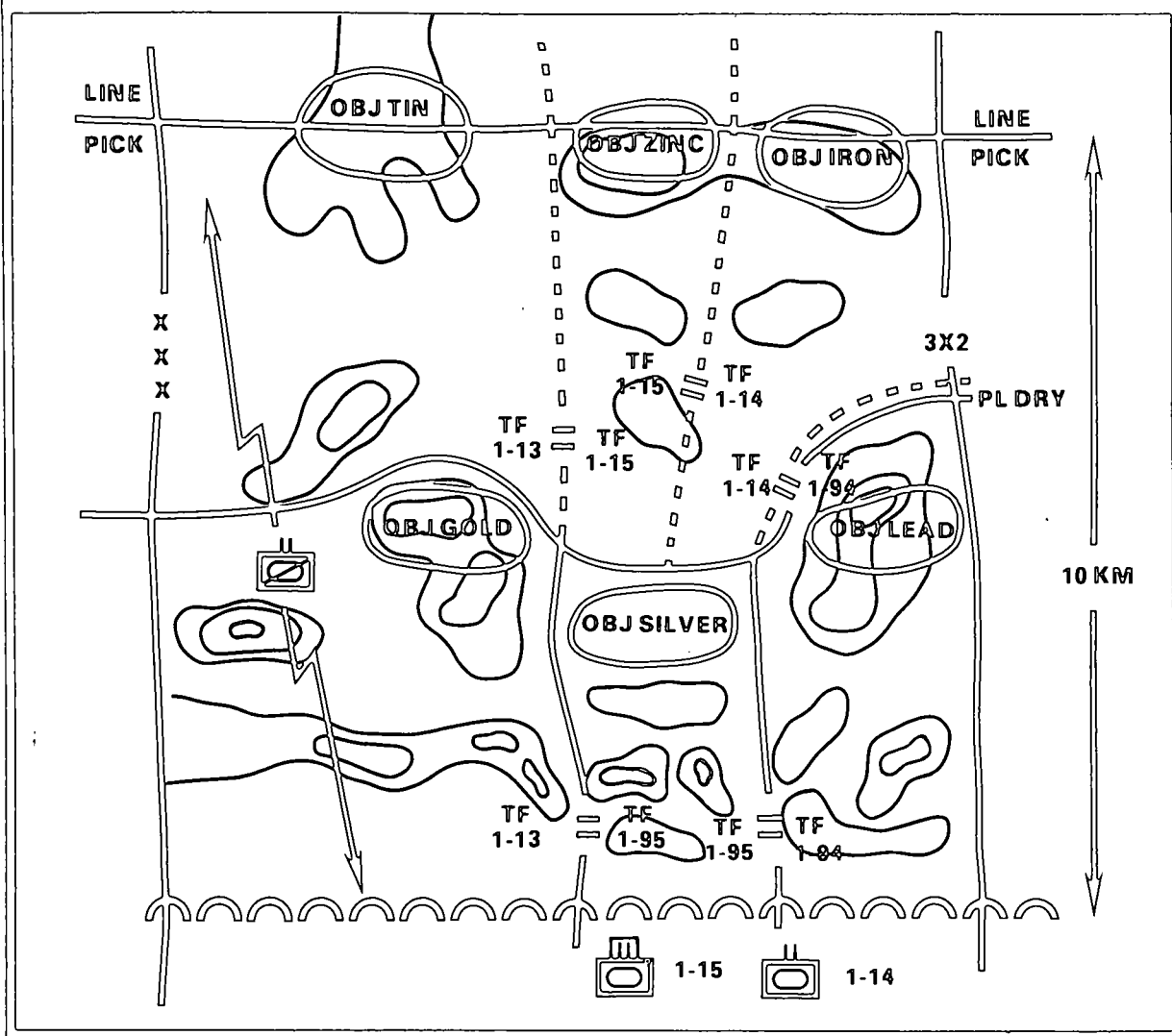
The brigade has been allocated the following major assets for this attack:

Tank battalions -	3
Mech battalions -	2
Cavalry squadron -	1
Fire support -	1 FA bde (two 155-mm bn, one 8-in bn) (DS) 28 CAS sorties
Engineers -	1 company reinforced (DS)
ADA -	1 Vulcan battery (DS)

After evaluating his mission and consulting with his staff (including the FSCoord), the brigade commander decided

to attack with three task forces abreast and one TF and one tank battalion in reserve. The cavalry squadron will protect the left flank. The brigade plan is shown in figure 4-25.

FIGURE 4-25. BRIGADE PLAN.



□ **Brigade Commander's Concept and Guidance**

TF 1-13 Armor, TF 1-95 Mech, and TF 1-94 Mech attack to rupture enemy defenses and secure OBJ's Gold, Silver, and Lead,

respectively. 1-22 Cav follows TF 1-13 initially; after the initial penetration, 1-22 Cav protects the left flank. As initial objectives are secured, TF 1-15 Armor bypasses TF 1-95 on the left and TF 1-14

Armor (picking up one mech co from TF 1-94), bypasses TF 1-95 on the right to continue the attack to secure OBJ's Zinc and Iron, respectively. On order, TF 1-13 continues the attack to secure OBJ Tin. On order, brigade will continue the attack beyond Line PICK or assist passage of the 24th Armored Division.

Discussing fire support with his FSCOORD, the commander stressed these things:

"I know division is planning a preparation. We need to make sure those targets critical to our attack are covered. My first concern is enemy tank units and ATGM positions in the first defensive belt, then command and control facilities, mortars, and supporting artillery for that area. Next, make sure deeper reserves, especially tank units, are attacked. Coordinate closely with div arty to get the most out of them. As we break through we will need extensive suppression to maintain our momentum. I want heavy suppressive fires, especially on our right flank, to move along with us. Be prepared to use scatterable mines against reinforcing units approaching from our flanks. Watch carefully for opportunities to apply close air support to tank units."

☐ FSCOORD Activities

The FSCOORD at brigade is normally the commander of the DS FA battalion. In this case, since the FA brigade has been given the mission of direct support of 3d Brigade, the brigade FSCOORD is the FA brigade commander. He will be assisted by the brigade FSO from the brigade's habitual DS FA battalion—who will remain at the brigade FSE.

The brigade FSCOORD has a very difficult task. He must rapidly take control of the three battalions now attached to the FA brigade and prepare to support the attack. The operation has been facilitated by the attachment of the brigade's habitual DS battalion (1-51 FA) to the FA brigade. Battalion FSO's and FIST chiefs will simply remain where they are. The FSCOORD must insure that the fire support system functions smoothly during the attack. His operation in this case is quite complex, involving

- ☐ accepting FS responsibility for the brigade zone,
- ☐ coordinating the passage of lines at the LC,
- ☐ support of up to six battalion-sized units during the attack, and
- ☐ coordinating another passage of lines at Line PICK.

☐ Fire Support Assets

CAS. Division has distributed 28 CAS sorties to the 3d Brigade for the main attack. The 3d Brigade ALO has notified the FSCOORD that an A-7 squadron will be flying most of the missions. Since the A-7 (and the A-10) has radios compatible with Army FM sets, FIST chiefs can directly control airstrikes when necessary.

FA. The 3d Brigade has a field artillery brigade in direct support. The FA brigade contains two 155-mm battalions and one 8-in battalion. The 3d Brigade also has second priority on the fires of an additional 8-in battalion that is GSR to the FA brigade. The FA brigade also receives four FAAO teams and two weapon-locating radars.

☐ Fire Support Tasks

At brigade level fire support must accomplish the following:

- ☐ Soften up the enemy defenses prior to the initial penetration.
- ☐ Support attacking units from the LD to the objective.
- ☐ Fire to fix, destroy, or neutralize local enemy reserves.

- Suppress fires from enemy overwatch forces.
- Deny enemy observation of supported operations.
- Soften enemy defensive positions on the objectives.
- Support the cavalry squadron attached to the brigade.
- Provide SEAD fires for CAS missions.

Based on the wargaming process, the brigade commander's guidance, and the assets available, the FSCOORD sets up his plan of fire support.

□ Fire Support Organization

CAS. Division has distributed 28 CAS sorties to 3d Brigade. After wargaming this attack, the brigade commander and FSCOORD feel that this is not sufficient and they request eight more sorties. Four sorties are allocated to each committed battalion TF for planning purposes.

FA. The commander of the FA brigade chooses in this case *not* to subassign missions to his battalions. Instead he will direct each of his 155-mm battalions to communicate directly with designated maneuver battalions. The 8-in battalion fires will be used to augment the fires of the 155-mm battalions and to attack targets of interest to the brigade commander. Priority of fires will go to TF 1-95, initially.

□ Fire Support Planning

For the preparation to be effective it must be a coordinated effort. In this case the division FSCOORD is responsible for insuring that fires by the FA brigade DS to the brigade and the fires of the div arty controlled battalions are complementary. The brigade FSCOORD will focus his fires on mortars, company and battalion command

and control facilities, and assembly areas and frontline defenses. The fires planned by division will be oriented more toward enemy field artillery, observation posts, battalion and regimental CP's, assembly areas, and defensive positions deeper in the brigade zone. ALL fire support assets, however, will focus on the enemy frontline elements in the breakthrough zone during the last part of the preparation.

□ Positioning

In this case the FA brigade commander will position all three of his battalions. Units will be placed as far forward as possible and movement will be by echelon—so that continuous fire support is maintained. Batteries in battalions should be from 2 to 5 kilometers apart with cover, concealment, protection, and ease of entrance and exit being the primary considerations for position selection. Priority of field artillery positions within the brigade zone goes to the three battalions of the FA brigade.

□ Coordination

The FSCOORD recommends that the brigade establish a CFL 2 km beyond the LD. At H-hour, the CFL will shift to a line just short of the second enemy defensive belt. As the brigade nears the enemy second belt, the CFL will be shifted beyond those positions. When the penetration of the second belt occurs and the exploitation begins, the CFL is moved about 10 km deeper into the enemy zone.

The FSCOORD must coordinate two passages of lines if the operation goes according to plan. The first will take place when the 3d Brigade attacks through the 1st Brigade. The second—a contingency—will

take place at Line PICK if the corps reserve armored division is passed through at that point.

In a forward passage of lines the passing FSCOORD (in this case the FA brigade commander) must take over fire support responsibility for the zone of the attack. Fire support responsibilities usually pass to the incoming FSCOORD at the same time the passing maneuver commander takes responsibility for the zone. This usually occurs prior to the actual passage of lines. As soon as a confirming order is received that a passage may take place the passing force immediately establishes liaison with the force in place.

The incoming FSCOORD is concerned with

- ☐ existing targets and fire plans,
- ☐ survey control available,
- ☐ existing communications facilities,
- ☐ OP's and other target acquisition assets,
- ☐ available firing positions,
- ☐ route priority,
- ☐ available cover and concealment,
- ☐ enemy capabilities, and
- ☐ friendly locations.

Like every unit involved in the passage process, each fire support unit must observe strict operational security measures to insure surprise. Radio listening silence, terrain marches, covered and concealed routes, and limited registration policy all aid in insuring surprise.

In the brigade deliberate attack planning:

- ☐ The FSO planned fires on enemy tank and ATGM positions, command and control facilities, and supporting mortars and artillery.
- ☐ The FA brigade controlled DS FA for the 3d Brigade's attack.
- ☐ Priority for FA positions went to the three FA brigade battalions.
- ☐ Brigade and battalion FSO's planned for two forward passages of lines.

FIRE SUPPORT COORDINATION FOR A FORWARD PASSAGE OF LINES IS DETAILED AND EXTENSIVE. THIS PREVENTS ANY DEGRADATION OF FIRE SUPPORT DURING THE PASSAGE AND ASSISTS IN MAINTAINING THE MOMENTUM OF THE ATTACK.

4-13. How to Support a Battalion Task Force Deliberate Attack

TF 1-95, as part of 3d Brigade, will pass through elements of 1st Brigade (TF 1-10) and attack to secure Objective Silver. The zone of TF 1-95 is shown in figure 4-26. The

task force is opposed by two platoons initially and a third platoon about 3 km into the zone. Deeper in the zone there appears to be a security element and a company in the vicinity of Line PICK. Terrain in the zone is hilly and wooded initially, opening up more beyond Objective Silver. Major assets available to the task force include:

FIGURE 4-26. THE TF 1-95 ZONE.

Mechanized task force:

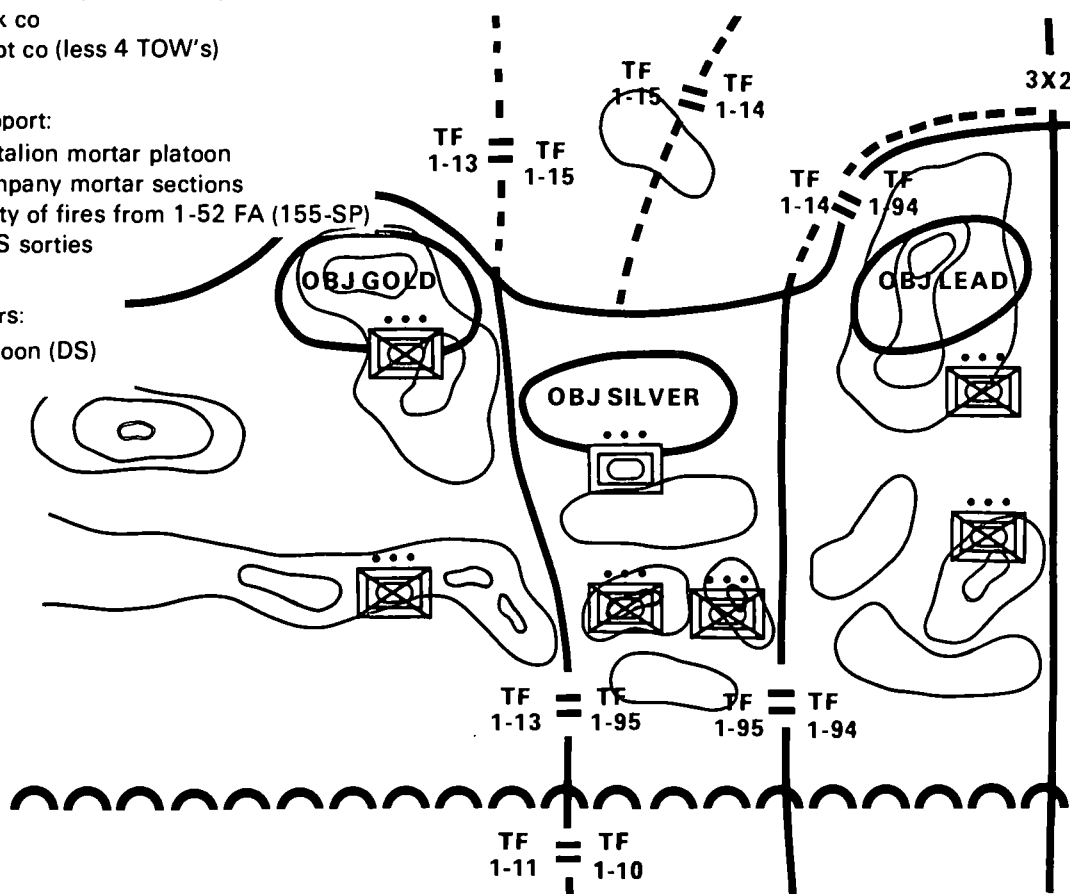
- 2 mech co's (2 TOW's ea)
- 1 tank co
- Cbt spt co (less 4 TOW's)

Fire Support:

- 1 battalion mortar platoon
- 2 company mortar sections
- Priority of fires from 1-52 FA (155-SP)
- 4 CAS sorties

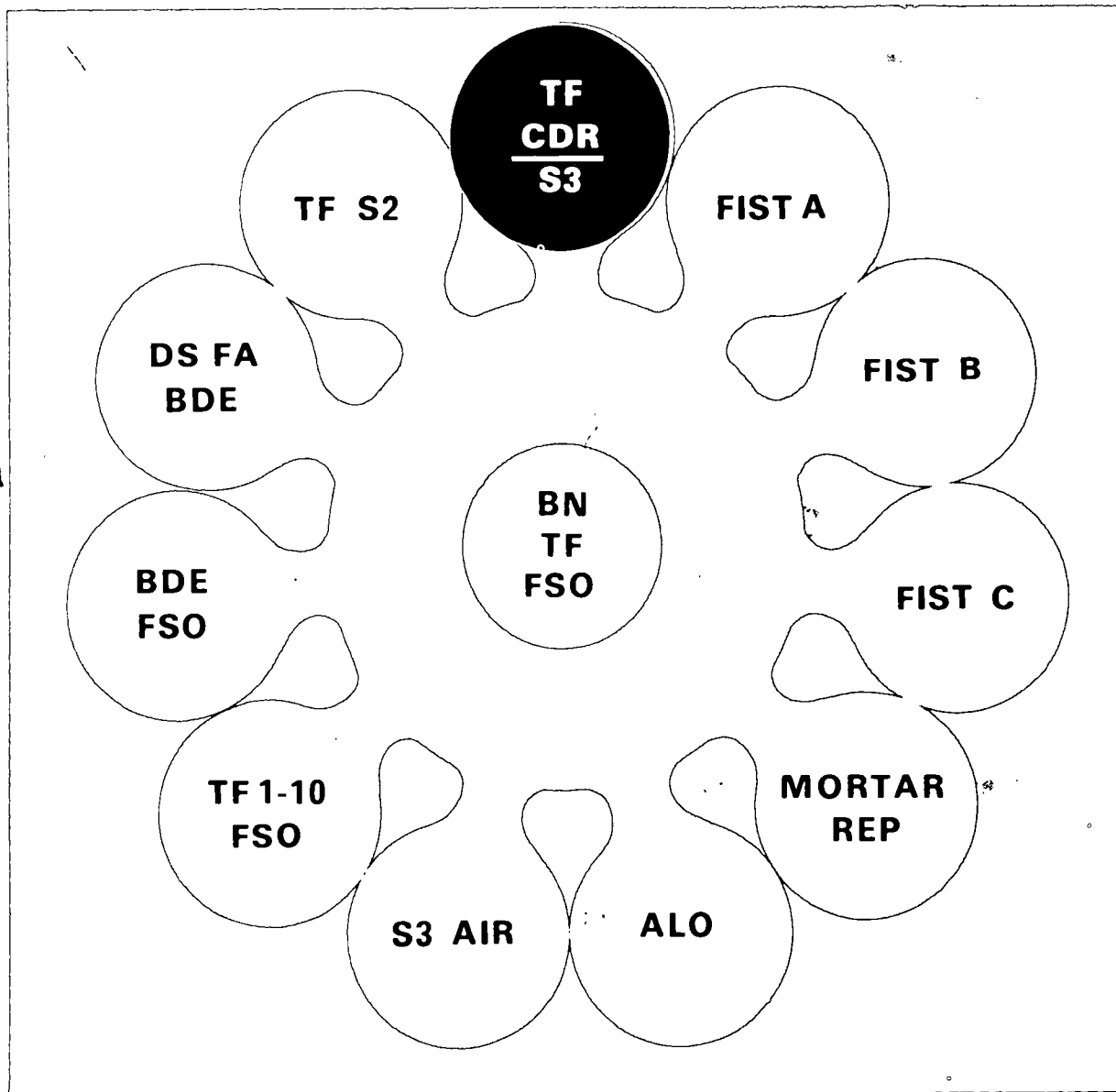
Engineers:

- 1 platoon (DS)



The FSCoord for the battalion TF is the FSO from the brigade habitual DS FA battalion. His contacts in the planning and coordination of FS for the deliberate attack are shown in figure 4-27.

FIGURE 4-27. TF FSO FIRE SUPPORT CONTACTS.



THE FSO'S FIRE SUPPORT PLANNING FOR THE DELIBERATE ATTACK WILL BE SIMILAR TO THAT FOR THE HASTY ATTACK EXCEPT THAT HIS PLAN WILL BE MORE THOROUGH. IN THIS CASE HE WILL ALSO HAVE TO COORDINATE A FORWARD PASSAGE OF LINES AND PROVIDE TARGETS FOR THE PREPARATION.

When the commander received his mission and began his planning, he went to the TF 1-10 CP with his S2, S3, and FSO to coordinate their passage of lines and gain information on the enemy and zone of action. The two task force FSO's discussed target information and fire plans currently in existence. They also discussed the use of TF 1-10 mortars to supplement fires available to TF 1-95 during the passage. Then the TF 1-95 command group moved to a forward OP for a visual reconnaissance. On the OP, the TF 1-10 (in-place unit) S2 briefs them on the terrain, the best avenues of approach, and the enemy. The TF 1-95 commander evaluates this information, further analyzes his mission in that light, and asks the FSO to update him on the brigade fire support plan:

FSO: "The brigade has 28 CAS sorties and has asked for 4 more. They plan to use eight of these to hit the main defensive belt early in the prep. Brigade has suballocated us four sorties and we may get more if the additional CAS request is approved.

"The FA brigade is DS to the brigade, and it has our habitual DS battalion, an additional 155-mm battalion, and one 8-inch battalion. We have priority of fires from 1-52d FA and our fire request will go directly to them. If we need additional artillery, FA brigade has its own 8-inch battalion and another 8-inch battalion GSR.

"The division prep will go from H-5 to H+5. Brigade has already targeted the enemy positions we requested on the first and second ridgelines. They'll be fired late in the prep.

"It looks like we'll be in range of three enemy FA battalions—two 122 and one 152. He also has some mortars behind Hill 368. The prep will attack his artillery, mortars, and OP's in the first phase. Fires will then shift to his command and control elements on the second and fourth ridgelines. At H+1 the fires will shift to his frontline defensive positions and end with a TOT on Hills 343 and 329."

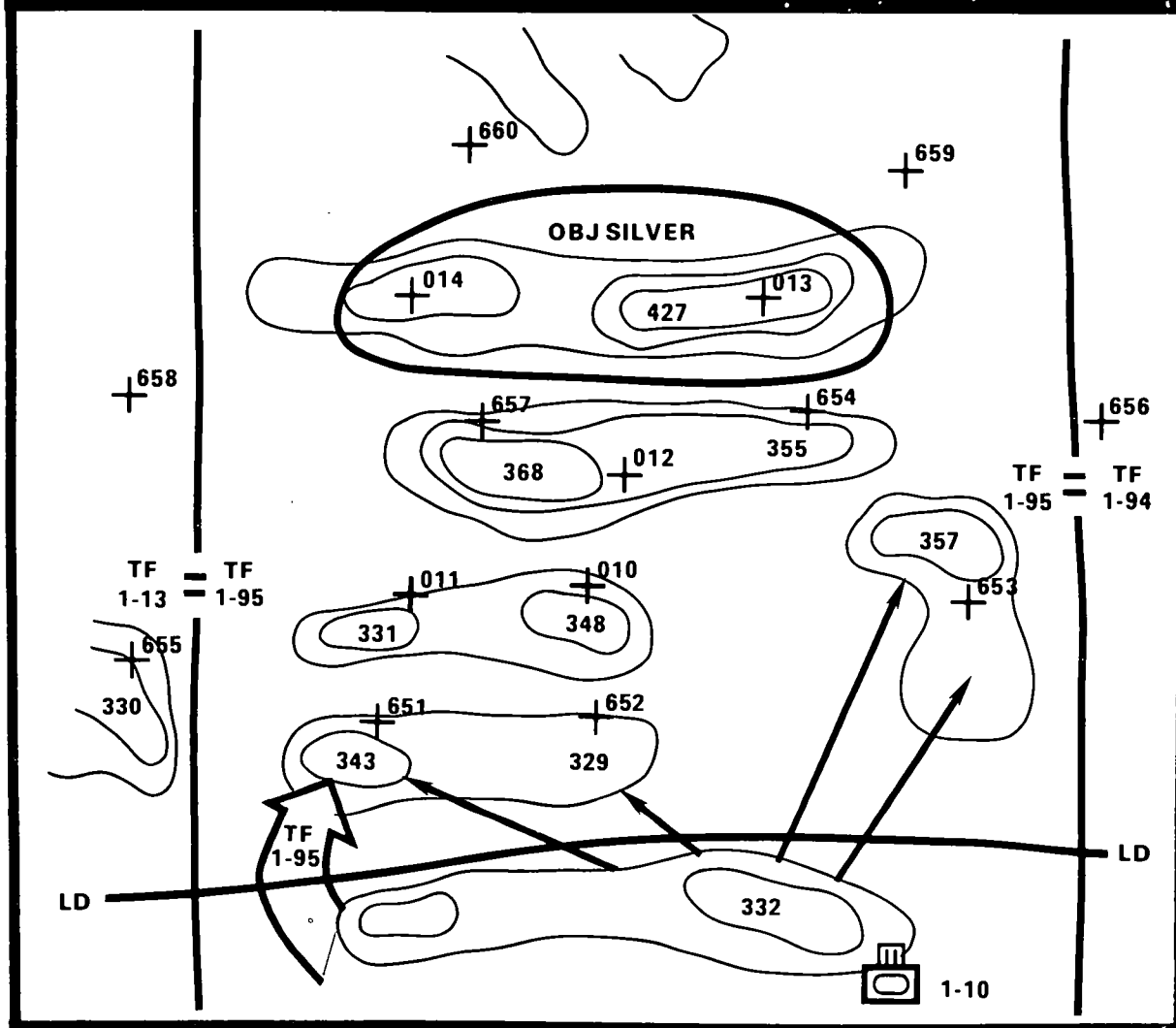
The commander, S3, and FSO then studied the overall situation to determine the best course of action for the attack. As a result of the commander's estimate, a four-step attack was developed.

□ **Step 1 (Fig 4-28)**

The task force crosses the line of departure moving to Hill 343, overwatched by TF 1-10 elements. Suppressive direct fires from TF 1-10 hit Hill 343-329 and Hill 357. Targets sent down from brigade include 010-014. As a result of his initial input to the preparation and subsequent wargaming, the battalion CO established Targets 651-656.

TF 1-95 will reach the base of Hill 343 just as the final rounds of the preparation are falling. The FSO will then continue to fire suppressive smoke and HE fires on Hill 329. As Hill 343 is seized, FA fires will be shifted to fire suppression on Hill 348. Battalion mortars will suppress enemy gunners on Hill 357 throughout step 1.

FIGURE 4-28. FIRST STEP OF TF DELIBERATE ATTACK.



Step 2 (Fig 4-29)

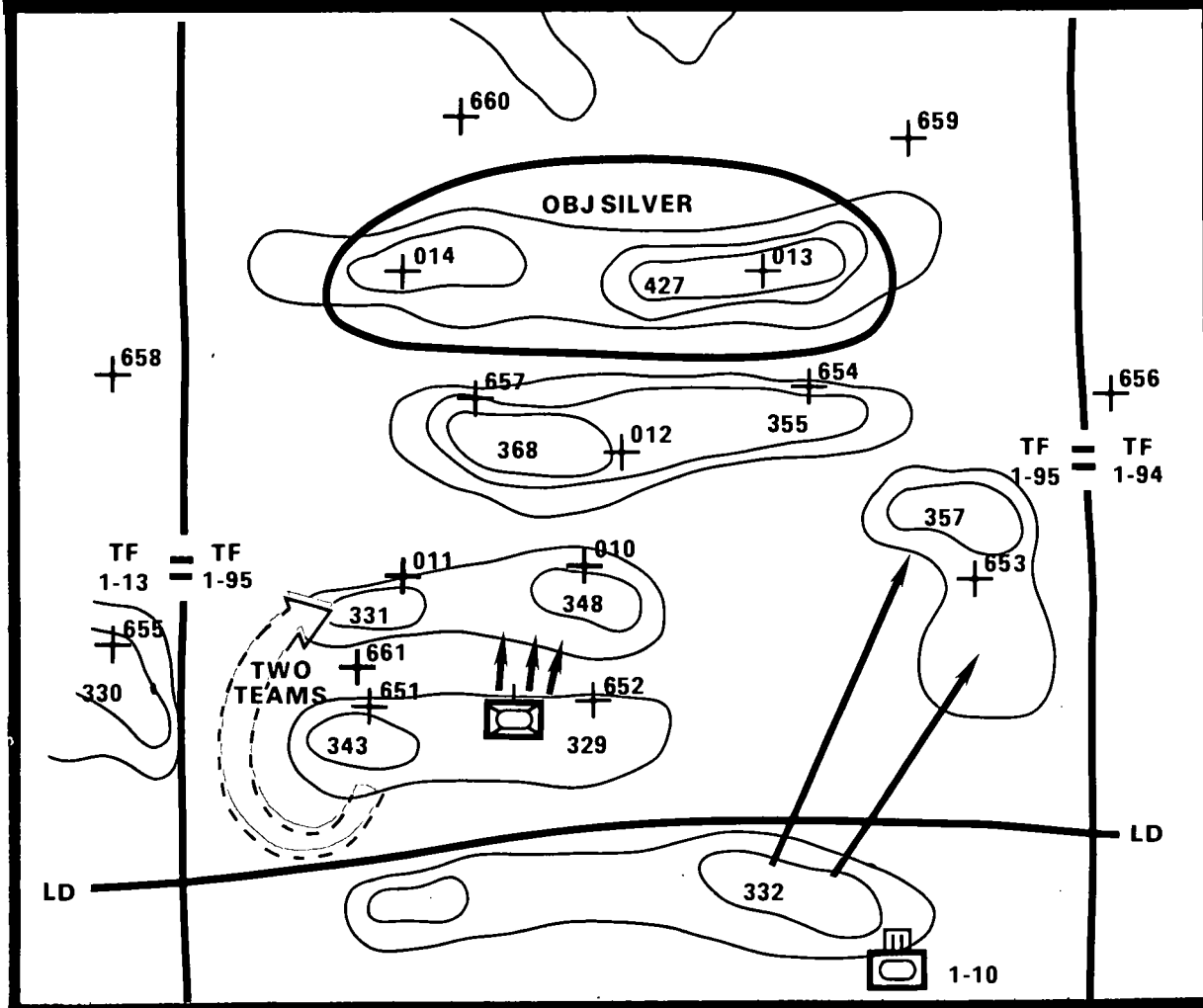
In step 2, one team on Hill 329 will provide suppressive fires on Hill 348 as TF 1-10 continues to suppress forces on Hill 357 (Target 653). Two teams will move around the left to envelop Hill 348 from the west. Suppression of forces on Hill 357 will continue with battalion mortars.

Smoke is planned north and south of Target 661 to screen the envelopment. Smoke is also planned on Target 655 in TF 1-13 zone to obscure that area if TF 1-13 has not secured Hill 330. If the smoke is required, TF 1-95 FSO

will coordinate directly with TF 1-13 FSO to clear the fires, insure friendly troop safety, and avoid interference with TF 1-13 operations.

Series "HAWK" is planned along the ridge between Hills 331 and 348 by adding three targets between 011 and 010. These will be phased from left to right to support the teams enveloping from the left. The *entire* series can be executed or targets can be engaged separately as necessary. After seizure of Hill 348, fires will be shifted to Hill 368 for suppression.

FIGURE 4-29. SECOND STEP OF TF DELIBERATE ATTACK.

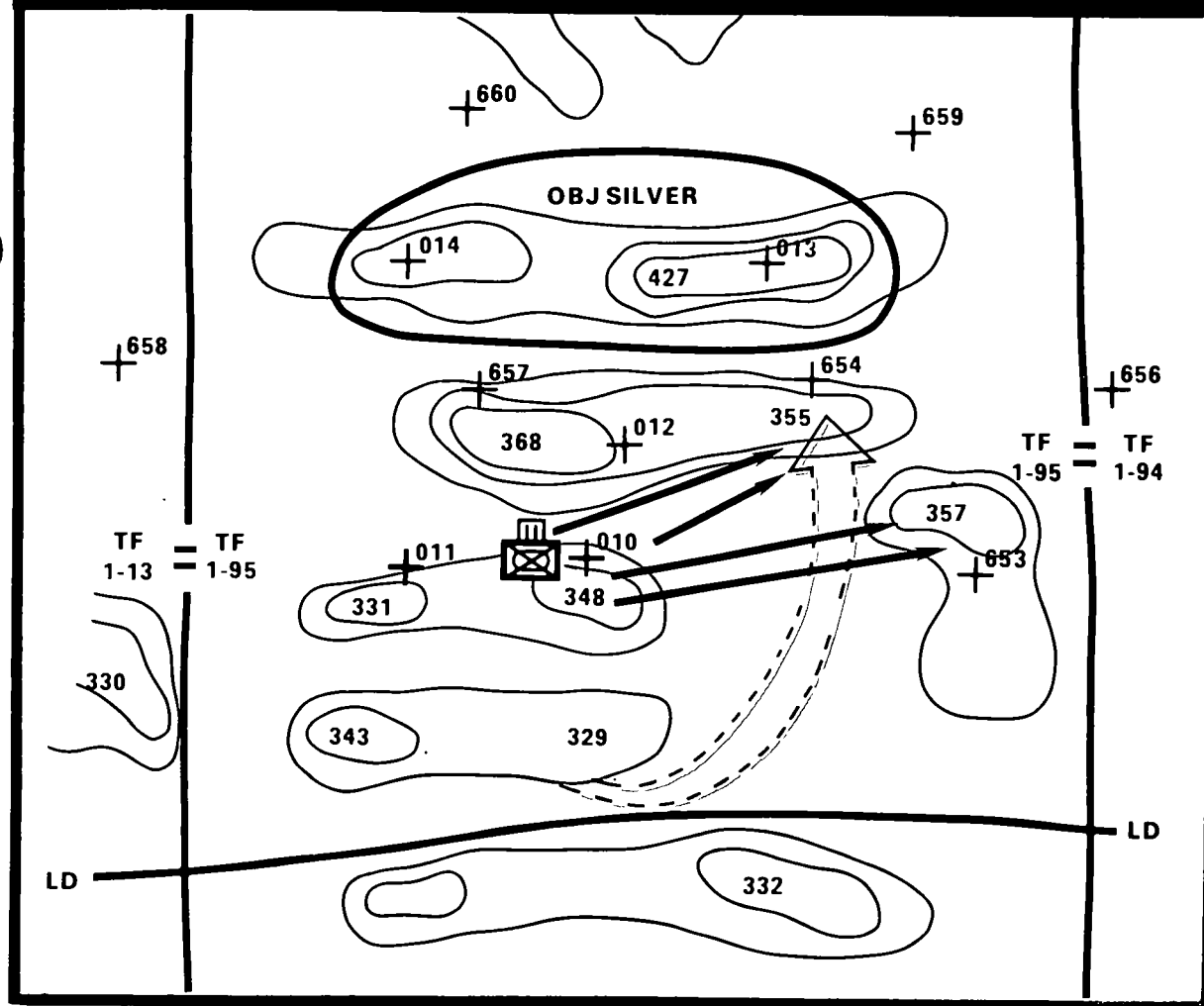


☐ **Step 3 (Fig 4-30)**

Step 3 continues direct fire suppression from TF 1-10 on Hill 357. TF 1-95 has two teams suppress Hills 355 and 357 from Hill 348. The team on Hill 329 attacks through the valley to Hill 355-368.

Heavy obscuring smoke is planned on Hill 357 to cover this movement. At the same time, enemy positions on 368 and 355 are suppressed by battalion mortars and field artillery fires. Suppressive fires on 355 will be shifted to OBJ SILVER (Targets 013 and 014) at the last minute.

FIGURE 4-30. THIRD STEP OF TF DELIBERATE ATTACK.



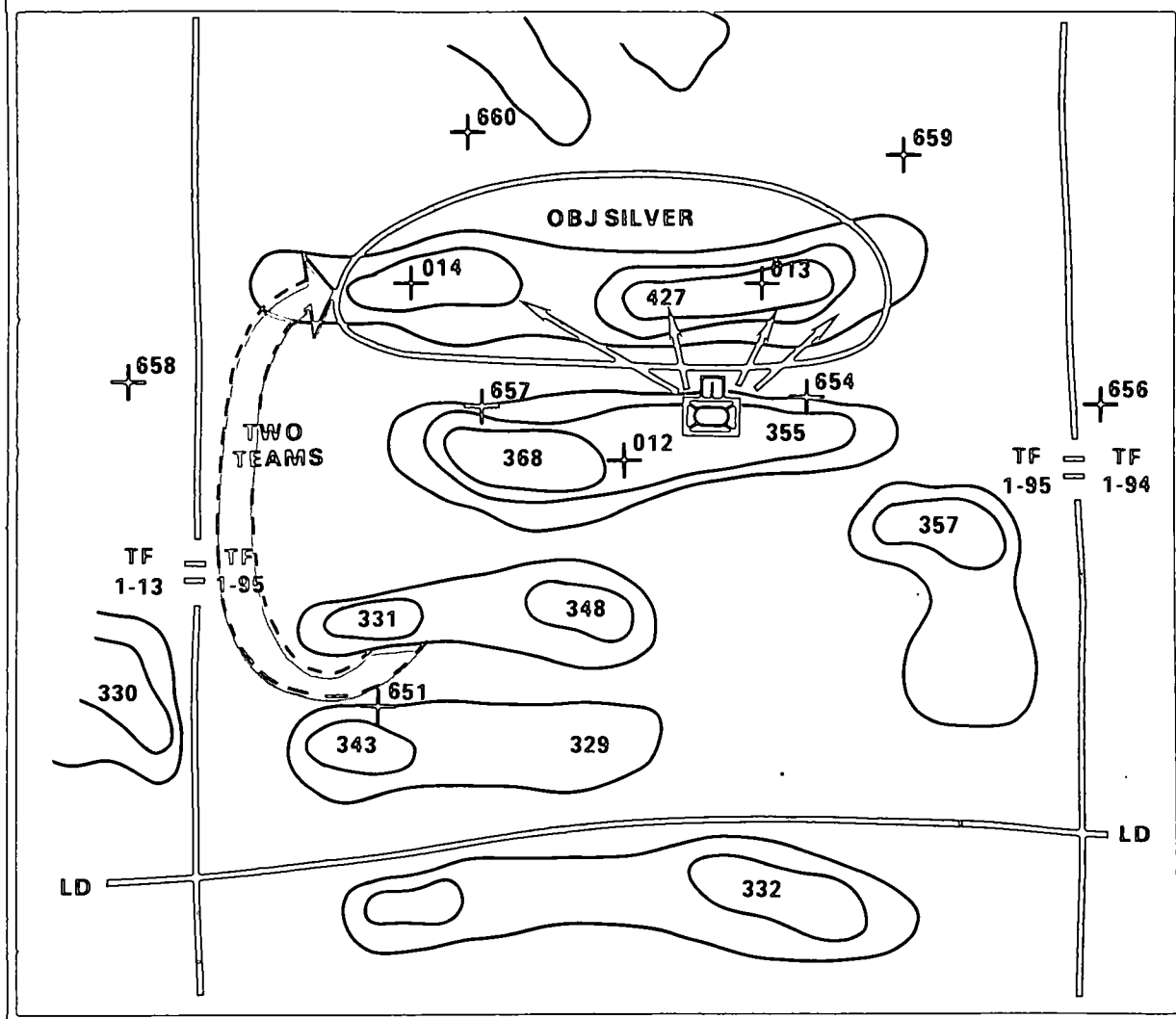
□ Step 4 (Fig 4-31)

In step 4, the team on Hill 355-368 suppresses OBJ SILVER with direct fire as two teams move rapidly from Hill 331-348 to the west of Hill 368 to attack the flank of OBJ SILVER. Obscuring smoke and HE-VT suppression is planned on Target 658 to cover the two teams' movement. (This will have to be coordinated with the TF 1-13 FSO before execution.) The battalion's four air sorties will be used to strike enemy positions on SILVER at this time. Series "FALCON" is

planned on OBJ SILVER by adding six targets between 014 and 013. Again these will be fired from left to right as the teams roll up enemy forces on the ridge.

As the lead teams clear the objective, the FSO plans to shift the FA fires to Hills 310 and 330 (not shown) 2 km north of SILVER. Targets 659 and 660 are planned so that fires can rapidly mass against any enemy counterattack to regain Hill 427. Fires are also planned to support the bypass of TF 1-15 on the left and TF 1-14 on the right.

FIGURE 4-31. FOURTH STEP OF TF DELIBERATE ATTACK.



In the battalion task force deliberate attack:

- Series HAWK and a smoke screen were planned to support the two enveloping co teams of TF 1-95.
- Obscuring smoke was employed to facilitate movement of an attacking company team.
- Mortars, FA, and CAS were simultaneously employed on a task force objective.
- TF 1-95 FSO coordinated directly with adjacent FSO's to insure timely attack of targets out of zone.

□ **Forward Passage of Lines**

Both the deliberate attack and the exploitation frequently involve division-sized forward passages of lines—the movement of a new division through a portion of a zone occupied by a division on line. Division passages during deliberate attacks are likely to be more thoroughly planned and more highly controlled than passages preceding exploitations. Both operations, however, present very complex fire support problems, and they share the following considerations:

- The new (incoming) FSCOORD must plan the fires to support the passing force based primarily on targeting information provided by the force in place. He must also insure that his operation does not impair any fire support needs of the "passed" force immediately preceding and during the time of that passage.
- Fire support responsibility for the zone of the passage shifts to the FSCOORD of the passing force at the same time the passing force commander assumes responsibility for the zone of the passage. This normally occurs *prior* to the actual passage.
- During a passage of lines, the artillery of the passed forces may be attached to the passing force or they may remain with their parent division and, from positions occupied to support the passage, augment the fires of the passing force artillery until the passing force is out of range.

□ The passing force normally receives a *warning order* notifying it of its requirement to make the passage and continue the attack. When this occurs, the passing force *immediately* establishes liaison with the force in place. This includes liaison between FSCOORD's. The new FSCOORD is concerned with

- ★ existing fire plans and targets that can affect the passage,
- ★ existing fire support assets,
- ★ survey control available,
- ★ existing communication facilities,
- ★ OP's and other target acquisition assets in use,
- ★ available firing positions,
- ★ SOP's in effect for fire support,
- ★ priorities for routes,
- ★ target priorities in effect,
- ★ available cover and concealment, and
- ★ enemy capabilities in the area.

□ Fire may be planned to include preparation fires, groups and series of targets, and suppressive fires with the FA of the passed force augmenting the fires of the passing force until the force is out of range. How much augmentation will be available must be agreed upon early in the planning phase and communications links must be established to insure that these augmenting fires can be responsively obtained. FO's and FSO's with both the *passing* and *in place* force must know *at all times* to whom they call for fire and over which nets. They must also be kept aware of anticipated changes as the passing force draws away and the situation returns to "normal."

□ Counterfire operations will assume great importance due to the relative vulnerability of massed forces during the passage. All target acquisition assets should be planned for and positioned to detect enemy indirect fire weapons. Field artillery units will be prepared and positioned to assume a very active counterfire role if necessary.

□ Initially, the FA should be positioned well forward. The DS and R battalions of the passing force must be positioned near movement routes for the passage.

- Coordinating measures to support the passage; i.e., CFL, RFL, etc., must be established early and disseminated to the passing and passed force to insure timely fire support and safety to friendly forces.

4-14. Fire Support for Exploitation and Pursuit

□ Employment of Forces in The Exploitation

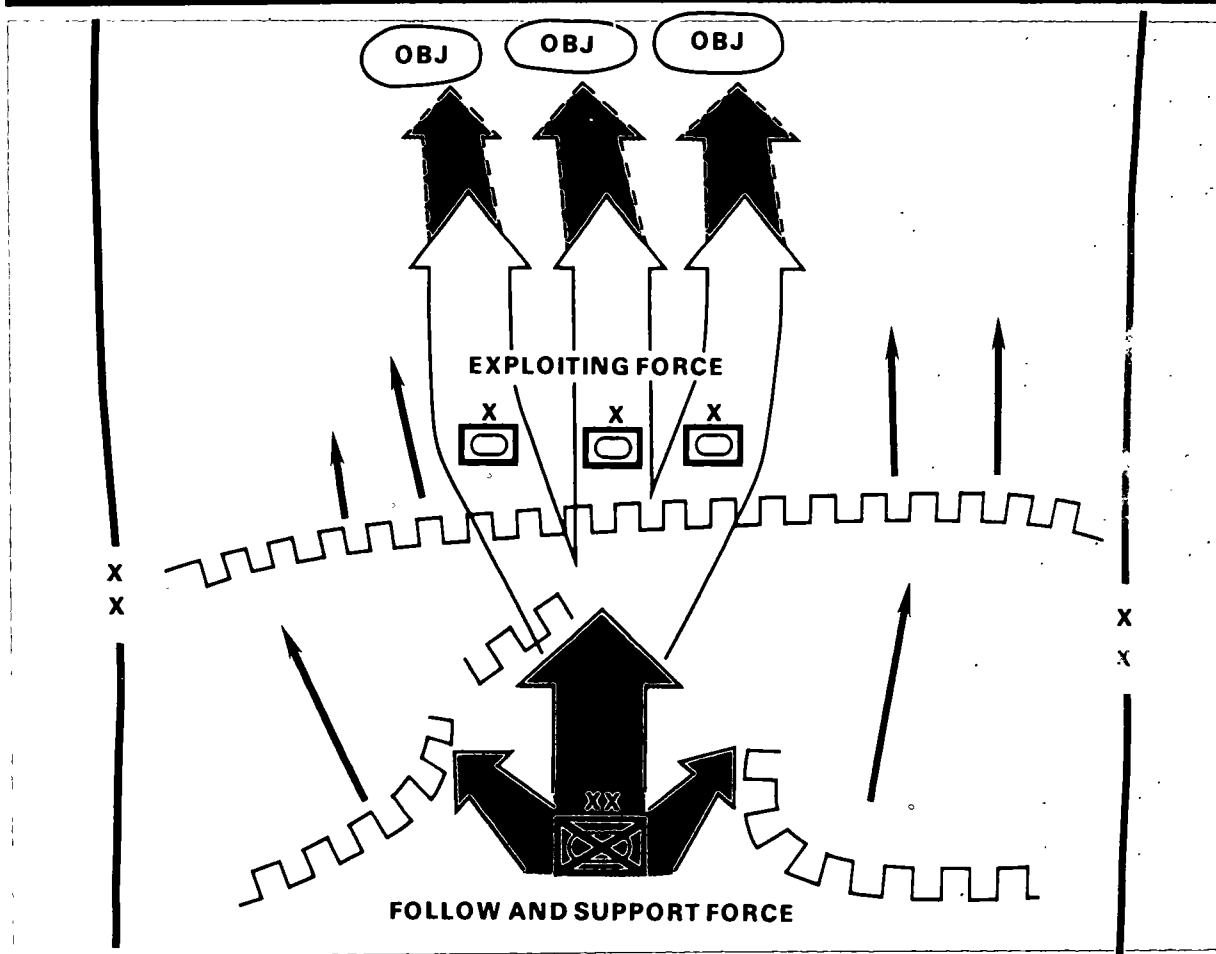
If an attack succeeds, friendly forces will normally exploit to follow up initial gains. The exploitation is conducted to destroy the enemy's ability to reconstitute his defenses or conduct an orderly withdrawal. An exploitation normally begins when the main enemy defenses are penetrated and the enemy is having recognizable difficulty maintaining his positions. The penetrating force usually holds the shoulders of the penetration while fresh forces pass through to exploit.

Exploiting forces strike swiftly to deep objectives to cut lines of communication and surround and destroy enemy reserves. The exploitation resembles, to some degree, the movement to contact with very decentralized execution, meeting engagements, freedom of action, and speed. Forces advance on a broad front with maximum forces forward. Small reserves are retained to insure flexibility of operation, momentum of the advance, and minimum essential security.

An exploiting force clears only as much of the assigned zone as necessary to permit its advance to continue. Enemy forces that interfere or are capable of interfering with the movement of exploiting forces are destroyed. Others are bypassed and reported to higher headquarters. Occasionally some forces may remain to fix enemy pockets of resistance until the exploiting force is relieved by follow and support forces.

Follow and support forces assist the exploiting force by securing lines of communication, relieving fixing forces, mopping up bypassed pockets of resistance, expanding the area of exploitation or blocking enemy reinforcements. Follow and support forces are as mobile as exploiting forces, staying well forward to assist. Close liaison is established between the follow and support commander and the exploiting commander to enhance cooperation and responsiveness (fig 4-32).

IN THE EXPLOITATION, THE SPEED AND DECENTRALIZED EXECUTION OF COMBAT OPERATIONS DEMAND GREAT FLEXIBILITY FROM THE FIRE SUPPORT SYSTEM. THIS MAKES THE FSCORD'S JOB EVEN MORE COMPLEX AND DEMANDING.

FIGURE 4-32. EXPLOITING AND FOLLOW AND SUPPORT FORCES.

□ Fire Support in the Exploitation

Exploitations normally involve a force of at least division size. In a typical example a reserve division would be passed through a newly created penetration and would drive aggressively toward objectives deep in the enemy's rear. Normally another division would follow and support the exploiting force.

The FSCOORD of the exploiting division is the div arty commander. His job is quite complex and involves:

- Coordination of the original passage of lines.
- Rapid change from a relatively centralized organization during the passage to a highly decentralized organization in the exploitation with brigades advancing rapidly on multiple routes.
- Constant coordination with the FSCOORD of the "follow and support" division to identify bypassed enemy elements and pass fire support tasks.
- Anticipation of situations that would require rapid transition to more centralized support of concentrating division elements making a hasty or deliberate attack.

Insuring ammunition, supplies, and maintenance required are thrust forward with exploiting fire support means.

Once the brigades begin their exploitation, the division's need for highly centralized control and deliberately planned mass fires decreases. There is an increase, however, in the need for highly mobile, flexible fire support that can respond fully to the needs of the exploiting brigades.

Fire support tasks for an exploitation include:

- Suppression of bypassed pockets of resistance.
- Support of maneuver units which temporarily drop out to "fix" enemy forces in a pocket of resistance.
- Support of battalion, brigade, and division hasty attacks required to overcome resistance that cannot be bypassed.
- Fires to slow or destroy counterattacking enemy forces.

Both FA and CAS must be prepared to accomplish all these tasks in the exploitation.

The exploiting division should be given as many CAS sorties as corps can afford. CAS is *well suited* for the exploitation.

- It can operate effectively in a situation when the enemy's defense (and *air* defense) structure is crumbling.
- It can deliver *massive* amounts of ordnance *quickly* throughout the battle area.
- It is not limited by being positioned in one place when it is needed in another.
- It can seek out, follow, and destroy the withdrawing enemy.
- Unlike FA *with* the exploiting force, refueling and ammunition resupply of CAS aircraft places no logistical burden on the exploiting unit. Close air support can be effectively preplanned for the early stage of the exploitation and for the final seizure of the brigades' exploitation objective. In between these points, however, preplanning will be difficult and CAS sorties will be used primarily against large, fleeting targets of opportunity.

□ Organization and Employment of FA in the Exploitation

The four FA battalions organic to the mechanized or armored division (three 155-mm and one 8-in battalions) and an attached four-battalion FA brigade (example: two 155-mm, one 8-in, and one 175-mm) would be ample field artillery to support an exploiting division.

There are two options for organizing FA to support an exploiting force. Each is based primarily on distance, command and control capability, and speed of the operation.

If the distance between lead elements and division artillery is not too great to prevent direct communications and positive control, and the lead elements are not moving too fast for div arty to maintain control, then standard tactical missions of DS, R, and GSR should provide adequate response to exploiting forces.

Each committed brigade (all three brigades may be committed) will receive a DS battalion and usually a reinforcing battalion. If it appears or develops that one of the zones of action moves faster, GSR missions may be given to add weight to that effort. Usually one or two battalions will remain in GS to support the division as a whole and provide a responsive counterfire base.

If distance from div arty to lead elements is great, direct communications and control are difficult, or lead elements are outdistancing higher headquarters, normal DS and reinforcing battalions will usually be attached to exploiting brigades. In this case an FA battalion group can be formed and attached. This is most likely to occur as the exploiting force expands its area of operations deep in the enemy rear.

When the exploiting brigade encounters a pocket of resistance that it can bypass, it may be necessary for field artillery with the exploiting force to place continuous suppression fires on the enemy forces until the brigade is safely past. In other situations the exploiting brigade may have to leave a

battalion TF in position to "fix" the bypassed enemy force while the exploitation continues. The FSCoord with the exploiting brigade must then arrange for fire support for the stay behind TF until either the follow and support division arrives or until a GS or GSR FA battalion from the exploiting division's div arty assumes the mission.

Fire planning for the exploitation may be fairly detailed for the first several kilometers beyond the penetration zone. After that point, however, exploitation fire planning will be hasty and informal—orienting on rapid attack of targets of opportunity. It will be done primarily by battalion FSO's and FIST chiefs.

FSCoord's at brigade and division level, however, must continually anticipate and plan for hasty attacks in case major resistance is encountered that cannot be bypassed.

☐ Positioning

The brigade FSCoord will position DS, attached, or reinforcing artillery. Because of the speed inherent in an exploitation, positioning of FA is an extremely challenging operation. In the brigades with more than one supporting FA battalion it will not be difficult to always have a unit in position ready to fire. In brigades with only one FA battalion, however, the problem will be much more difficult. Then batteries in position will be quickly outranged by exploiting forces and these batteries will have a difficult time catching up when they displace.

☐ Coordination

The FSCoord has several key coordination problems in the exploitation. These include

- ☐ coordination of the original passage of lines at the penetration;
- ☐ constant coordination with the follow and support forces—to include the recommending of the establishment of restricted fire lines where needed; and

- ☐ closely monitoring the progress of exploiting brigades to insure that fire control measures (such as RFL's) are placed into effect if brigades begin to converge.

☐ FSCL

In this case due to the highly fluid nature of the operation, the FSCoord must recommend that the FSCL be kept *well* forward. Locations of friendly units will be constantly changing and all CAS in the objective area must be *closely* coordinated.

☐ Employment of Forces in the Pursuit

The pursuit to destroy a retreating enemy is an extension of the exploitation. The pursuit is conducted to cut off the enemy and completely destroy him. The commander rapidly commits all available forces to pursue when the enemy has lost his ability to operate effectively and attempts to flee.

Forces conducting a pursuit continue direct pressure on a broad front against the enemy with one element. Another highly mobile encircling element cuts the enemy's line of retreat to intercept and destroy him. If the encircling force cannot outdistance the enemy, it attacks the enemy main body on the flank.

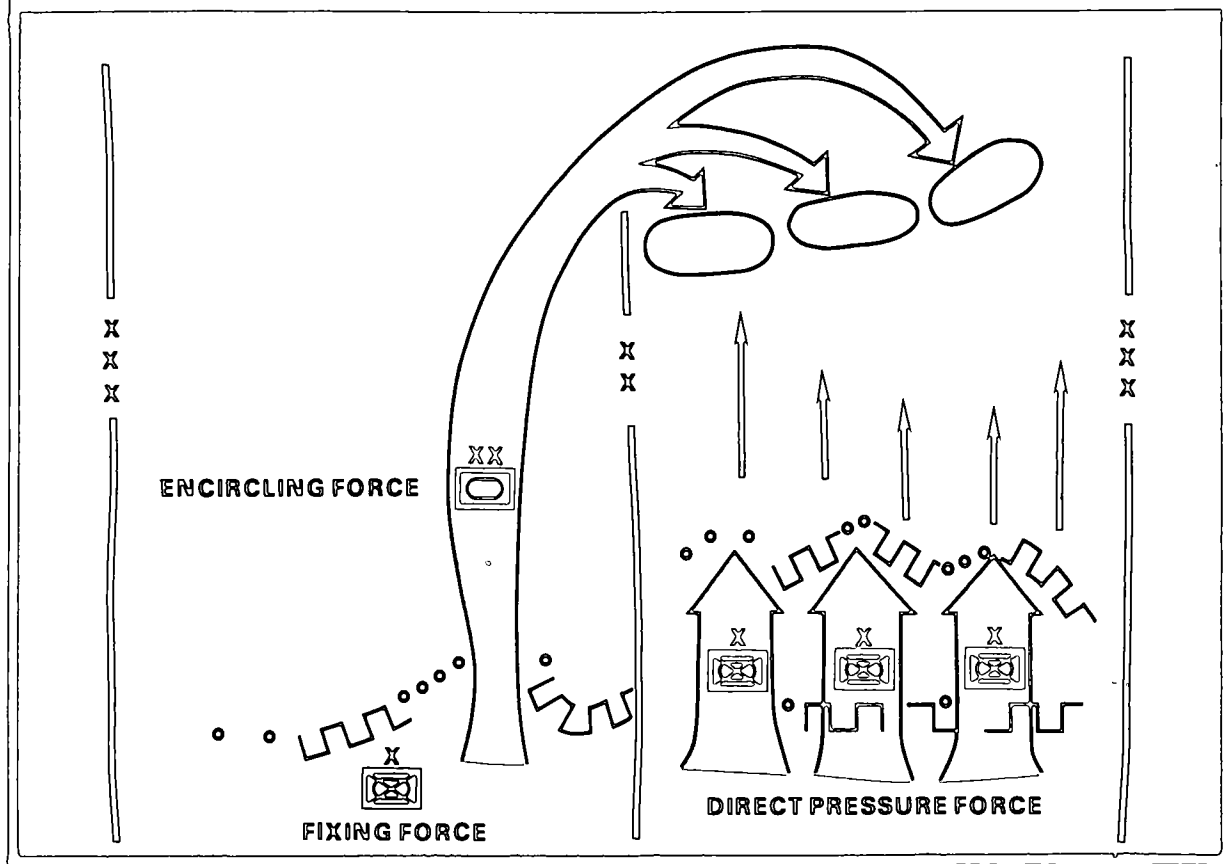
Airmobile forces may be employed to secure key terrain in the path of the retreating enemy, blocking his escape routes. Tactical air forces strike deep, concentrating on escape routes and enemy reserves.

In many respects fire support for a pursuit is similar to that for an exploitation. The principal differences are explained by the single goal of the pursuit: destruction of the enemy force. While rapid advancement of elements on multiple routes characterize both operations, in the pursuit the *objective* is to bring the elements together at the end to destroy the enemy.

The fire support system must be flexible enough to allow independent support of the direct pressure and encircling forces during

the pursuit—yet allow coordinated employment to effect destruction of the enemy after he is trapped (fig 4-33).

FIGURE 4-33. DIRECT PRESSURE AND ENCIRCLING FORCES.



Whether the pursuit is conducted by a corps or a division, the same functional roles (direct pressure and encircling) must be played and the same fire support tasks accomplished. These tasks include:

Support of the direct pressure force by

- firing on retreating enemy units to slow, erode, demoralize, and destroy them;
- suppressing enemy rear guard and strongpoint units so that they can be bypassed and contact with the main force maintained; and
- massing fires from all fire support means on enemy forces concentrated around

chokepoints, defiles, communication centers, and bridges.

Support the encircling force by

- suppressing enemy positions with smoke, HE, and ICM so that the enveloping force can rapidly bypass them; and
- firing to support the encircling force's flank attack if it is unable to outdistance the enemy main body.

Support the converged direct pressure and encircling force by

- massing fires from all fire support means to destroy the trapped enemy.

If a corps is conducting the pursuit with direct pressure and encircling divisions then the FSCoord of each division will plan and coordinate fire support of their respective operations. The corps commander will establish the appropriate boundaries, FSCL's, and RFL's to insure that fires can be coordinated smoothly when the forces converge.

If a single *division* is furnishing both the direct pressure and encircling forces, the division FSCoord must recommend to the division commander how the division's fire support system should be organized. Both the direct pressure and encircling forces must have highly responsive fire support. Both will need CAS sorties allocated for preplanned missions and for use against targets of opportunity.

The division's field artillery assets must be organized for combat to deal with this operation. Again, distance, capability to control, and speed of movement are the main factors in determining whether FA assets with the encircling force are *attached* to that force or if support is furnished by use of FA battalions with direct support and reinforcing missions.

Like the exploitation, fire planning for the pursuit will be primarily hasty and informal. Planned fires for the direct pressure force will orient on chokepoints and defiles where the retreating enemy may be forced to bunch up. The encircling force will plan suppressive fires all along its route to support its rapid movement.

Fire planners at division level should anticipate the most likely locations at which the encircling force can trap the enemy and plan for the employment of massed fires at critical chokepoints. They should also plan fire to cover any gaps or escape routes around the flanks of the positioned encircling force.

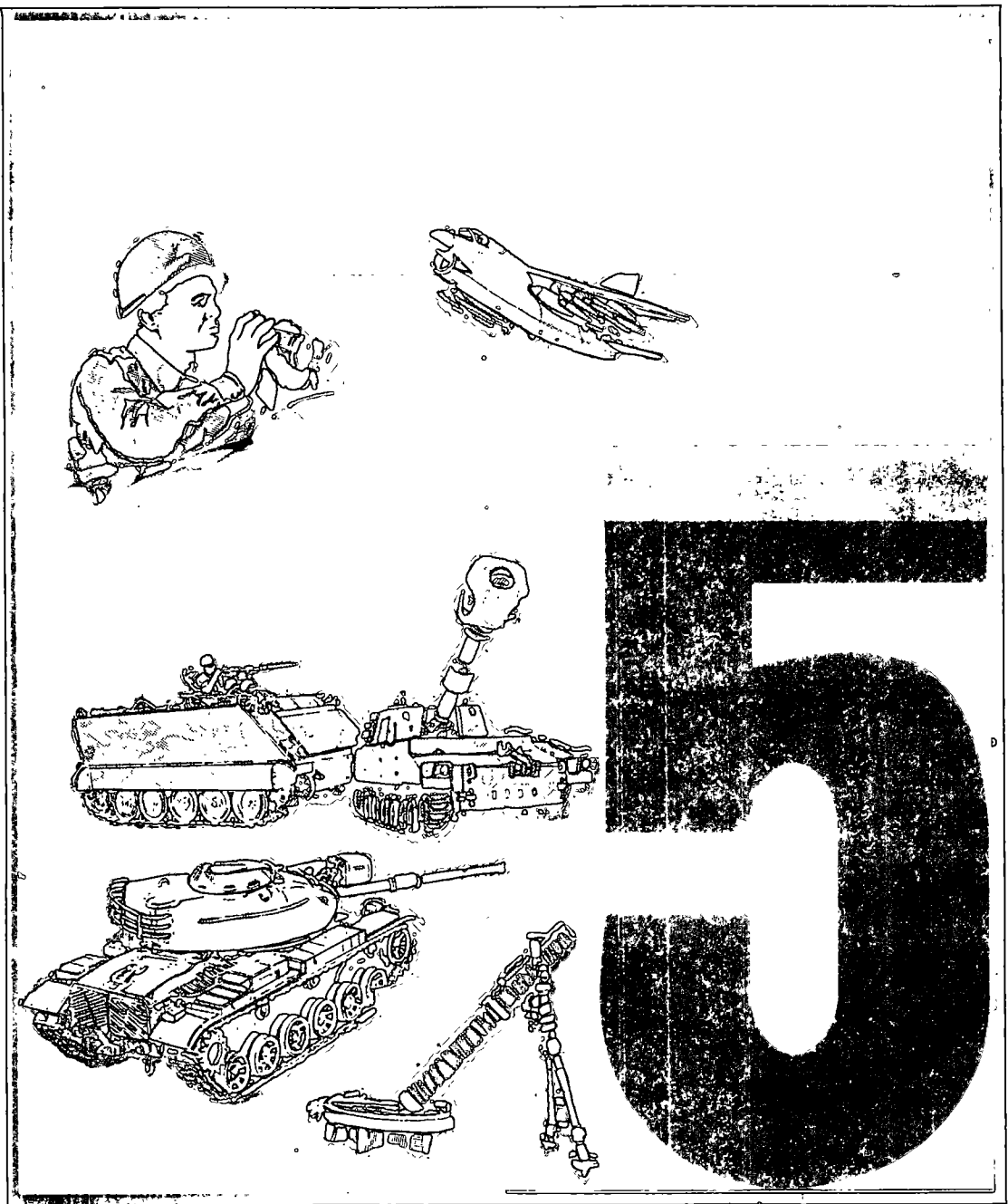
□ Coordination

The most important coordination problem faced by the pursuing division FSCoord occurs when the direct pressure and encircling forces converge to destroy the enemy. The division FSCoord must insure that the division's entire fire support system is brought to bear on the trapped enemy force. Normally a restrictive fire line (RFL) is placed between the two converging forces to insure smooth coordination of fires while the situation is fluid.

4-15. Summary

The concepts and fundamentals of various offensive operations and how the fire support system supports the operations has been discussed. The relationship between maneuver and field artillery commanders and their staffs in planning and executing the battle plans has been described as the key to successful offensive operations. This relationship coupled with an offensive spirit is the winning combination. The next chapter describes the defense—the prelude to the offense.





Defense

5-1. Purpose of the Defense

When we defend, we will be outnumbered. If we are to succeed, we must exploit our weapons, our mobility, and the advantages of the defender to wear the enemy down. Then we can seize the offense and seek the decision on our terms. The purposes, concept, and fundamentals for defensive operations are treated fully in FM's 100-5, 71-100, and 71-101. They are shown here (fig 5-1) because they provide the framework for defensive fire support.

WHY

- The enemy must attack to win. We can make his attack fail with a well-conceived, vigorous active defense that maximizes combat power.

WHAT

- This chapter tells you:
 - the purpose, concept, and fundamentals of the defense;
 - the considerations for defensive fire support;
 - how the fire support system supports the covering force area and the main battle area; and
 - the considerations for fire support in retrograde operations.

FIGURE 5-1. PURPOSES OF THE DEFENSE.

- Cause Enemy Attacks To Fail
 - Preserve Forces, Facilities, and Installations
 - Wear Down Enemy Forces As A Prelude to Our Offensive Operations
 - Retain Tactical, Strategic, or Political Objectives
 - Force The Enemy To Mass So He Is Vulnerable to Our Firepower
 - Concentrate Forces Elsewhere
 - Gain Time
 - Control Essential Terrain
-

5-2. Concept of the Defense

The active defense is designed to defeat an enemy who attacks with superiority in men and weapons. The active defense wears down the attacker by confronting him successively and continuously with lethal combined arms forces. Forces are deployed *well forward*. A *strong covering force* makes contact as early as possible to make the attacker deploy, reveal his main thrust, and gain time to concentrate forces in the main battle area.

Elements in the main battle area stay *flexible*, prepared to concentrate combat power against the main thrust. This implies thinning of our less threatened areas, assuming risk there. The division normally keeps only a small reserve. Mounted elements move rapidly to oppose the attacker from successive defensive positions prepared in depth. When certain terrain features are determined to be vital to the defense, the defender may organize team or task force strongpoints on which he may become decisively engaged. If required to hold an enemy forward of a line or terrain feature for a specified period of time, the defender may risk decisive engagement from all defensive positions. Maximum advantage is taken of terrain to emplace weapons and units, build obstacles, slow the enemy, and ultimately defeat him.

5-3. Fundamentals of the Defense

Just as the force commander uses the following fundamentals in his plan for defense, his fire support coordinator heeds them to tailor the fire support system for the defeat of the enemy attack.

- ☐ Understand the enemy.
- ☐ See the battlefield.
- ☐ Concentrate at critical times and places.
- ☐ Exploit the advantages of the defender.
- ☐ Fight as a combined arms team.

☐ Understand the Enemy

Chapter 2 described the threat we are likely to face both in Europe and other parts of the world. Regardless of the enemy faced, commanders and staff officers must study the enemy's weapons and his tactics and techniques for using them. Commanders and their FSCOORD's must understand the enemy's maneuver doctrine and his fire support capabilities—what his fire support means are and how he uses them—if fire support is to be integrated into the plan of defense to defeat the enemy.

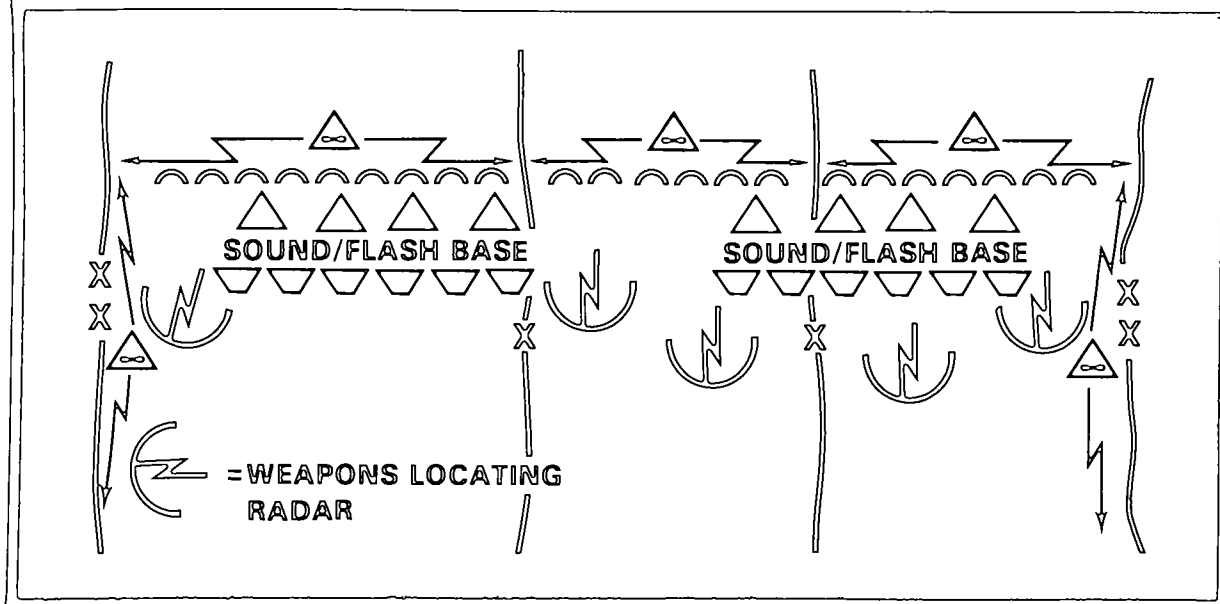
☐ See the Battlefield

To offset the numerical superiority of the attacker, our Army must "see" the battlefield accurately. An outnumbered defender *must* know where the enemy is making his main effort. Only then can he concentrate his combat power at the decisive place and time. The coordination of intelligence gathering and the use of all-source intelligence is the commander's personal responsibility. The FSCOORD supports the commander in this effort by:

- ☐ insuring a two-way flow of information between maneuver intelligence sources and fire support targeting agencies,
- ☐ recommending the best employment of target acquisition assets, and
- ☐ insuring that results from all-source intelligence and target acquisition agencies are quickly and appropriately targeted.

Figure 5-2 shows division artillery target acquisition assets.

FIGURE 5-2. DIVISION ARTILLERY TARGET ACQUISITION ASSETS.



☐ **Concentrate at Critical Times and Places**

Based on all information available on the enemy and the terrain, commanders must decide when and where to concentrate forces. They must also decide how much force will be required to cope with the enemy attack—generally the defender should not be outweighed by more than 3 to 1 in terms of combat power. To help the division commander concentrate forces, his FSCOORD (the division artillery commander)

- ☐ recommends organization, allocation, and positioning of fire support assets that make massed fires possible in the critical area;
- ☐ recommends positioning of FA units so that fires are continuous during critical defensive actions;
- ☐ plans and coordinates the use of close air support; and
- ☐ monitors ammunition expenditures to insure that supplies are adequate when forces are concentrated.

☐ **Exploit the Advantages of the Defender**

The advantages that naturally accrue to the defender stem from his ability to know every wrinkle of the terrain and use this familiarity to his advantage. The defender can

- ☐ position where he can engage the attacker with massed fires;
- ☐ use the terrain to carefully site, emplace weapons, and plan fires;
- ☐ reinforce terrain obstacles to slow the enemy;
- ☐ prepare mutually supporting battle positions in depth; and
- ☐ plan to move units along covered routes.

The FSCOORD insures that the fire support system capitalizes on the defender's advantages. He makes certain that

- ☐ battle positions are provided the mortar, FA, and CAS support they need;
- ☐ fire support contributes to slowing the enemy down;
- ☐ survey control is available and *used* in both target areas and firing positions to permit first-round fire-for-effect; and

- FA and mortar ammunition and supplies are prestocked in fallback positions.

The maneuver commander and his FSCoord must be constantly aware that the essence of the active defense is to use the defender's advantages to weaken and wear down the enemy.

□ **Fight as a Combined Arms Team**

Maneuver commanders plan defensive battles and organize forces for combat according to the size and density of the enemy attack, the characteristics of the terrain, and the mix of defending units. The FSCoord assists the commander in insuring that the fire support contribution optimizes the overall effort—that it aids other team members in maximizing their effectiveness.

For example:

- Massed FA can engage an advancing enemy at great distances. FA can cause tanks to button up and reduce their effectiveness. CAS can destroy them.
- Mortars and FA suppress enemy air defenses to allow our aircraft to operate effectively.
- FA and mortars should: 1) suppress antitank guided missile gunners while friendly maneuver elements are moving, 2) destroy infantry dismounting to attack our antitank weapons, 3) obscure friendly force movement with smoke, and 4) isolate follow-on enemy echelons with smoke.

5-4. Fire Support in the Defense

Commanders and FSCoord's should use the following considerations as a basis for planning and coordinating fire support for defensive operations.

□ **Centralize Control of Fire Support**

The vagueness of the initial situation in the defense dictates that the commander maintain control of fire support means to

react quickly when he discovers the enemy's main thrust. CAS sorties will probably be retained as a tactical reserve at division level for use in critical areas. FA units will be assigned tactical missions that retain fire planning, priority of fires, and positioning authority at higher levels to maximize their capability to rapidly mass and shift fires. However, responsive, continuous fire support must be provided to *engaged* maneuver forces. As a minimum every committed brigade must have the support of its DS FA battalion.

□ **Use Mobility to Concentrate Fire Support as Necessary**

When the range limitations of FA and mortar units preclude the effective massing of indirect fires, they must be moved to "thicken" critical areas with firepower, just as maneuver forces "thicken" the defense of the critical area. Moves must be planned and coordinated so that the maximum number of firing units are available at any given time.

□ **Engage Targets on the Basis of the Commander's Priorities**

The enemy attack will, at times, present more targets than we can effectively engage. Because our resources are limited, FSCoord's must take special care to insure that we attack the most dangerous targets first in accordance with the commander's target priorities.

□ **Engage the Enemy as Far Forward as Possible**

The enemy should be attacked as far away as possible so that attrition begins as early as possible. As he advances he faces an ever-increasing, continuous volume of firepower. Unless the battle plan dictates otherwise (e.g., to achieve surprise or enhance the accuracy of direct fire gunners), targets should be engaged when acquired. FA and mortar units must be positioned far enough forward to allow early engagement of acquired targets, yet must be echeloned in

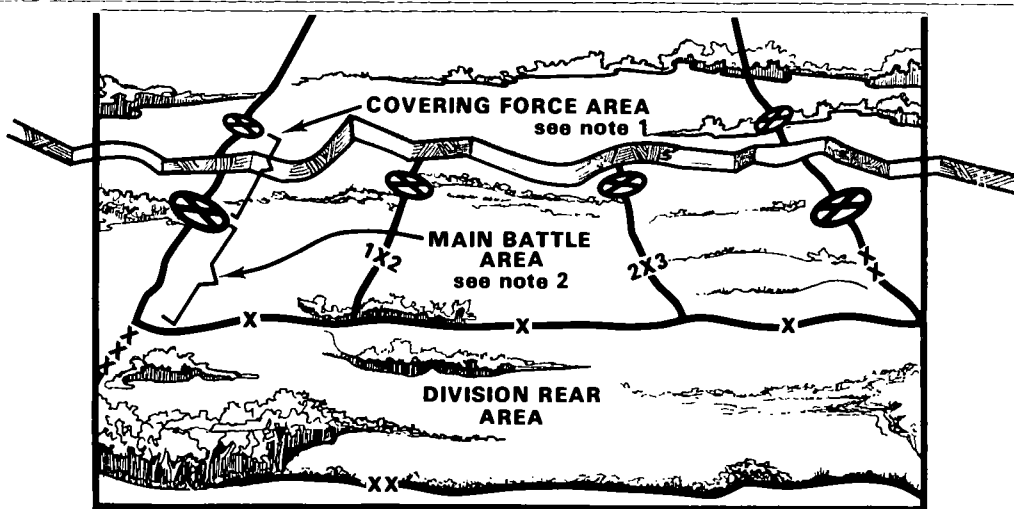
depth so that continuous fire can be maintained.

5-5. Organizing the Battlefield

To perform a defensive mission a division or corps allocates forces for three areas: covering force area (CFA), main

battle area (MBA), and division rear area (fig 5-3). The width, depth, organization, and mission of forces in each of these areas vary based on the commander's analysis of the division mission, knowledge of the terrain, strengths and tactics employed by the enemy, and the capabilities of division forces.

FIGURE 5-3. DEFENSIVE BATTLEFIELD ORGANIZATION.



Notes.

1. When the division begins the defense with forces in contact, a covering force area will not normally be established; forward brigades, however, will establish security

as required.

2. Depiction of three brigades in the MBA is for illustrative purposes. The actual number of brigade headquarters forward depends on the specific tactical situation.

□ Covering Force Area

The CFA extends from the forward edge of the main battle area to the line of contact or the initial delay position (IDP). The CFA should be deep enough to allow friendly forces to develop the situation and determine the enemy's intent. Covering forces slow, delay, and wear down the enemy. They exert sufficient pressure to cause the enemy to form for a breakthrough attack. Forces in the CFA must make the enemy reveal the location of his main thrust.

A division covering force must be highly mobile and might consist of four to six battalion task forces formed mainly of armored or air cavalry supplemented with tanks, mechanized infantry, attack helicopters, antitank weapons, air defense, engineers, and strong fire support assets. A covering force may be organized from corps, division, and/or brigade assets.

The covering force may be controlled by corps, by division, or the MBA brigades may control the covering force forward of their positions. With the corps or division covering

force, MBA forces will assume control of covering forces operating forward of MBA positions to insure a smooth transition into the MBA fight. The "change of command" of the covering force normally occurs 9-16 kilometers from the FEBA when the covering force battle can be supported by DS field artillery within the MBA.

CAS and FA should be employed liberally to canalize the enemy, erode his combat power, and reduce his forward momentum. When defending forces maneuver, mortars and FA can suppress enemy weapons to reduce vulnerability and increase freedom of action. Mortar and FA smoke is used to isolate lead enemy forces from follow-on echelons. Smoke is also used to assist disengaging friendly forces and to screen movement to new battle positions.

☐ Main Battle Area

The MBA is bounded in front by the FEBA and in the rear by the division-designated rear boundaries of the defending brigades. The bulk of the defending force is deployed there since this is the area the defender chose for decisive battle to defeat the enemy. Forces are prepared to concentrate to defeat the enemy main thrust.

Fire support is used in the MBA to stop, slow, or destroy enemy forces and to enhance the employment of direct fire weapons. Maximum use of massed surprise fires inflict the greatest damage upon the enemy force. Since refinement of MBA fire support planning occurs during the covering force battle, targeting information and intelligence on the developing battle must flow from the CFA to the MBA.

A committed division normally has an FA brigade augmenting fires of the div arty. The FA brigade is either attached to the div arty or is given the mission to reinforce the div arty. When attached, the FA brigade as a whole may be given a tactical mission or the div arty commander may assign tactical missions to individual battalions.

CAS sorties are targeted on the enemy

main thrust, on enemy air defense control and firing elements, on second echelon enemy forces, and on enemy supplies, ammunition, POL, and replacement fighting vehicles. Most CAS sorties will be flown against targets that cannot be attacked effectively by friendly FA fires.

☐ Division Rear Area

The division controls the area behind the brigade rear boundaries. Combat service support is projected forward from this area to sustain the defending forces. Brigade trains and some division reserve elements may also be located here.

5-6. Fire Support Tasks in the Defense

The force commander in the defense should expect his fire support system to:

- ☐ Disorganize, delay, and weaken the enemy *before* he attacks.
- ☐ Strike him as he attacks to strip away his air defense and reconnaissance: 1) button up his armor and slow it down; 2) canalize him; 3) suppress his direct fire weapons; and 4) reduce the odds.
- ☐ Mass fires to canalize, stall, and destroy attacking elements in the MBA.
- ☐ Fire beyond the MBA to isolate first echelon forces, to freeze and weaken second echelon forces.
- ☐ Counterfire throughout to suppress, neutralize, or destroy his indirect fire support.

Counterfire is managed at the div arty TOC. Counterfire targets are acquired by the div arty target acquisition battery and by other intelligence means available to the division or corps. The div arty TOC analyzes this information and coordinates the timely attack of counterfire targets. Fire support assets are allocated for counterfire through the establishment of priorities for FA support and the assignment of tactical missions to battalions. Counterfire targets are attacked in priority using artillery units with GS and

GSR missions followed by DS battalions and their reinforcing battalions. GS/GSR battalions are positioned by the div arty and are normally oriented on counterfire. Direct support and reinforcing battalions are oriented on the close support of maneuver.

5-7. Fire Support in the Covering Force Area (CFA)

☐ Control of the CFA

Forces in the CFA may be under division control, or under control of the brigades in the main battle area. On rare occasions, corps may control forces in the covering force area. Three variables influence the decision: depth of the CFA, width of the sector, and availability of control headquarters.

Often the CF will be controlled by division, which will pass control of the battle to the forward committed brigades at a reasonable distance forward of the MBA (9-16 km). Prime considerations in the location of the change of control are the nature of the terrain and the ability of the MBA brigades to coordinate indirect fires in support of CFA forces. Other considerations include the flow of the battle, enemy pressure, and communications capability to positively control CFA forces.

☐ Control of Fire Support in the CFA

Within a division-controlled covering force, control of all fire support is centered in the covering force headquarters FSE. Specifically, FA may be controlled by:

- ☐ an FA brigade headquarters (augmented with communications, CP vehicles, and a targeting element) if one is available to the division; or
- ☐ a forward control headquarters from division artillery.

The FSCOORD for the covering force will be the FA brigade commander or the senior officer in the div arty forward headquarters.

The FSCOORD will be assisted by the fire support officer in the covering force headquarters.

If covering forces are under control of the MBA brigades, additional forces will be provided to the brigades for this mission. The additional field artillery (usually a reinforcing battalion from the FA bde) will be controlled by the FA battalion in direct support of the MBA brigade. In this case, fire support planning and coordination activities for both the CFA and MBA forces will be centered in the brigade FSE. The FSCOORD is the DS battalion commander who is assisted by the brigade FSO.

☐ Supporting a Division-Controlled Covering Force (*Example*).

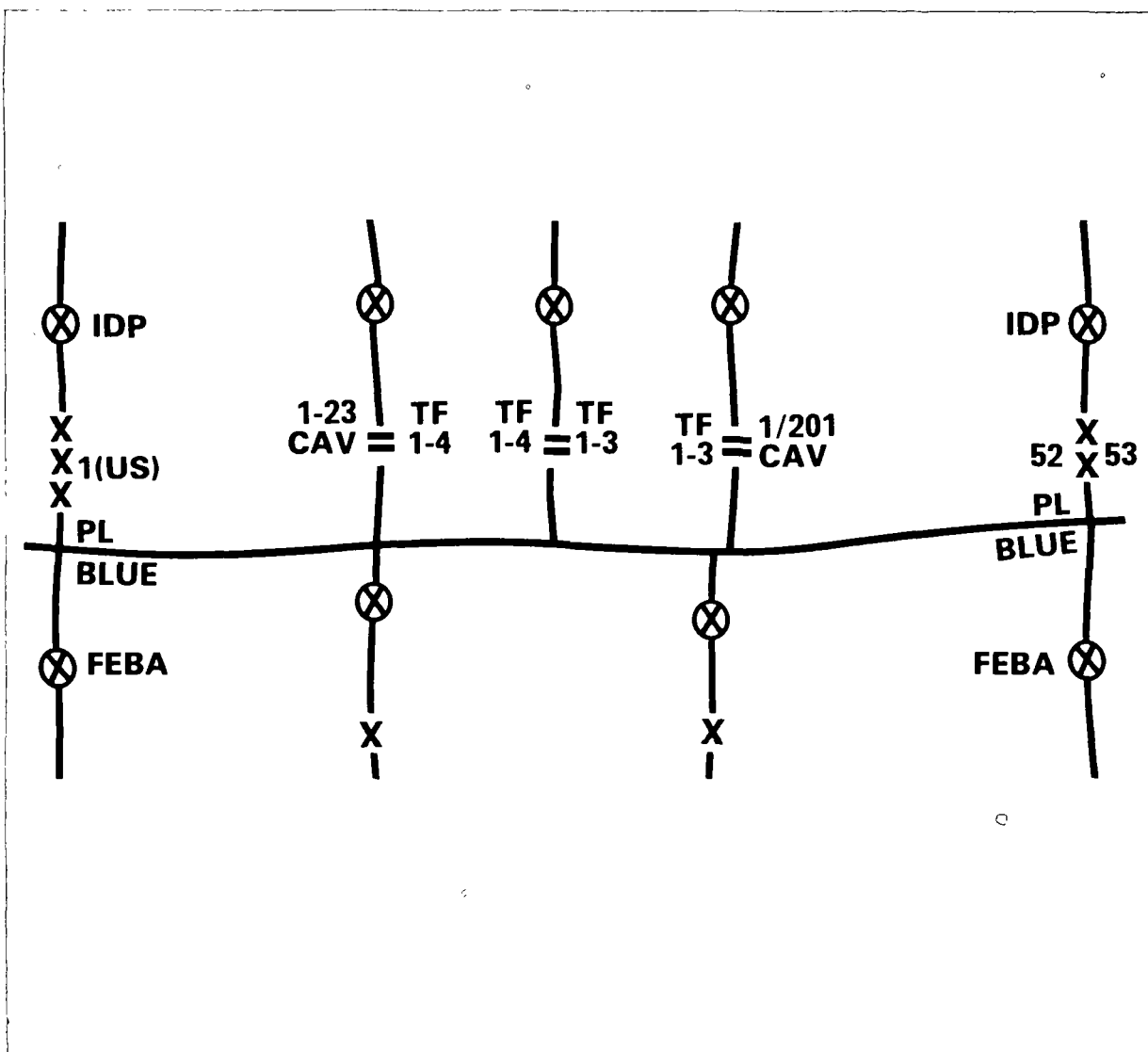
A US mechanized division has received the mission to "defend in sector." The division sector includes the covering force area. Corps has attached the corps armored cavalry regiment headquarters and one ACR squadron, and a field artillery brigade (three 155-mm how SP bns, one 8-in how SP bn, and one 175-mm gun SP bn) to the division.

After analyzing his mission and situation, the division commander allocated forces to the MBA, the covering force, and a small division reserve. The division-controlled covering force consists of the ACR headquarters and cavalry squadron, the division cavalry squadron, and two tank heavy task forces. Engineer support is provided by a two-company engineer task force. The division FSCOORD (div arty commander) recommended, and the commander approved, that the FA brigade (with the divisional 8-in bn attached) provide the FA support for the covering force. The FA brigade headquarters will function as the covering force FA headquarters. Maneuver battalions assigned to the covering force will retain their normal FIST's and FSO's.

The covering force commander is to delay the enemy forward of the FEBA. The terrain is relatively open and rolling, especially in

the center of the covering force sector. The center avenue of approach appears to be the most likely place for a major enemy

FIGURE 5-4. MANEUVER UNITS IN CFA.



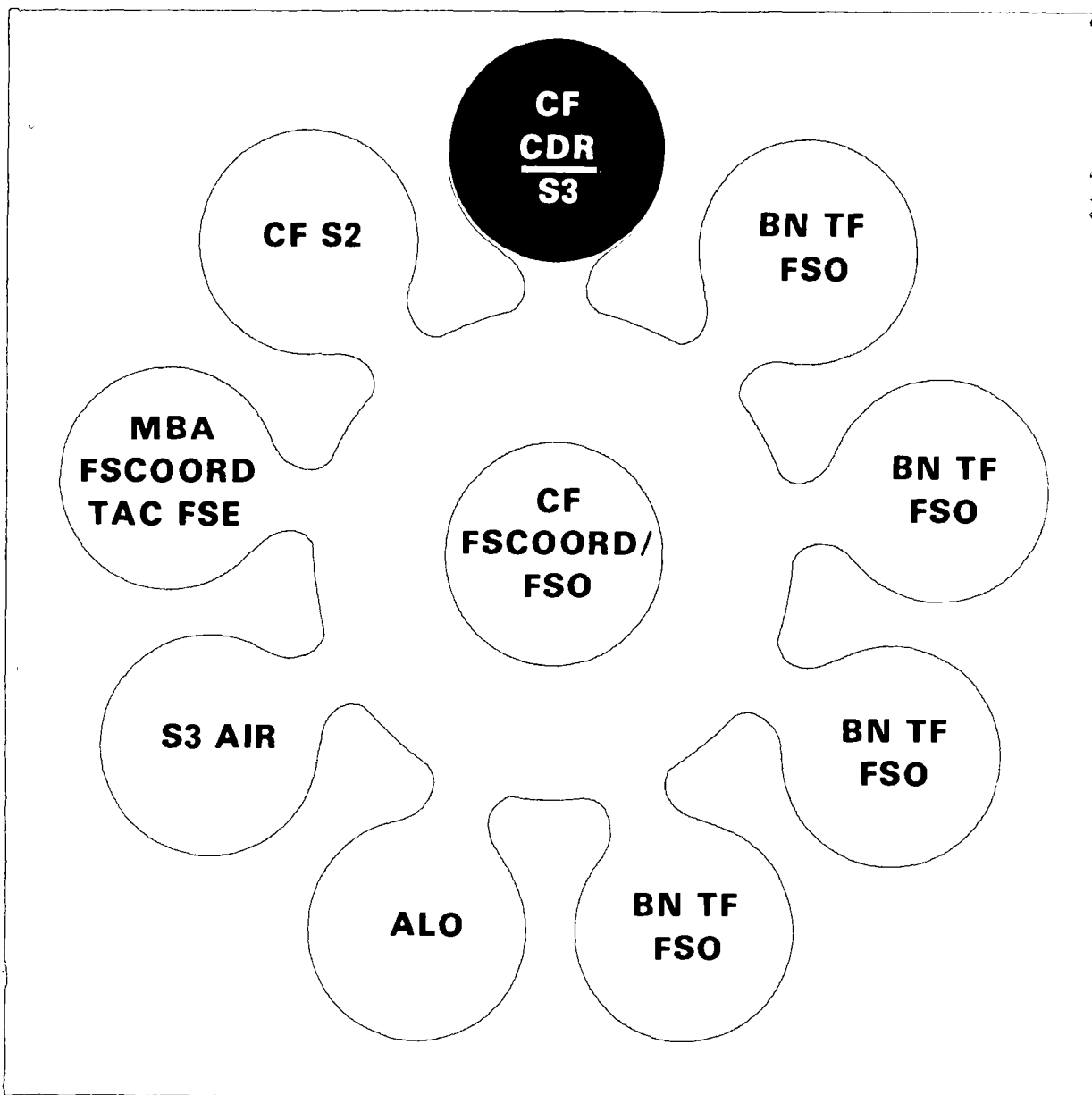
breakthrough effort. Therefore, the covering force commander distributes his maneuver units with narrower sectors in the center as shown in figure 5-4.

The remainder of this paragraph and paragraph 5-8 (How to Support a Battalion Task Force in the Covering Force Area) illustrate how the covering force will plan its fire support.

The CF FSCoord is the commander of

the FA brigade. He advises the CF commander on all fire support matters. He is assisted by the ACR FSO who becomes the assistant FSCoord. His contacts in the planning and coordination of fire support are shown in figure 5-5.

FIGURE 5-5. COVERING FORCE FSCoord FIRE SUPPORT CONTACTS.



The CF commander and the FSCOORD work together to visualize the battle and develop the general plan of fire support for the CFA. The FSCOORD must:

- determine the CF level FS tasks;
- considering the commander's guidance and assets available, assign tasks to the most appropriate asset;
- recommend allocation/organization of FS assets for subordinate maneuver units; and
- prepare the CF fire support plan.

In this case, the CF FSCOORD also has a special responsibility—he must insure that a constant two-way flow of information takes place between the CF FSE and div TAC FSE in the MBA.

□ CFA Fire Support Tasks

Fire support tasks at covering force HQ level consist primarily of:

- providing adequate FS assets to subordinate units for their close support;
- placing deep fires for use early on approaching enemy forces to slow, canalize, and destroy them;
- deceiving the enemy as to the location of the forward edge of the main battle area;
- attacking massed enemy forces with massed fire support means;
- massing fires on isolated breakthroughs in the CFA;
- providing counterfire; and
- suppressing enemy air defenses.

After the CF commander, his S3, and the FSCOORD have determined and prioritized the fire support tasks, the FSCOORD must consider available FS assets and commander's guidance to determine how the tasks can best be met. His assets include:

- CAS - 40 sorties/day.
- FA - the FA brigade HQ, three 155-mm battalions (one of which is the DS battalion from the corps reserve separate mech bde), two 8-in battalions (one of which is the div 8-in bn) and a 175-mm battalion. The fires of the division's three remaining FA battalions (the three 155-mm bns DS to the bde) will also

become available. When the covering force fight moves within range, these units will be in forward supplementary positions near the FEBA and—upon request—will augment the fire of covering force artillery units as the fight comes into range.

The CF commander's guidance to the FSCOORD includes:

"Give plenty of highly responsive fire support to the battalion task forces.

"Be sure to position FA to avoid interference with maneuver forces. The situation may develop quickly, so position with rearward movement in mind. Recon routes and rearward positions, keep as much equipment loaded as possible, and be prepared to move on short notice. We'll need these FA units for the MBA battle too.

"I retain authority to emplace scatterable mines. You (FSCOORD) and the engineer coordinate closely to complement the obstacle plan to further reduce the enemy's momentum.

"Plan fires to: 1) engage enemy at maximum effective distance possible, 2) cover obstacles, 3) cover flanks and gaps with fire, 4) allow CAS and AH to operate effectively, 5) destroy enemy electronic jammers."

The FSCOORD then assigns fire support tasks to the most appropriate FS means available.

Field Artillery.

□ Close support requirements will be met by recommending to the CF commander that each *battalion TF* receive one FA battalion in direct support.

□ The remaining FA units (one 8-in and one 175-mm bn) will be used to augment the fires of DS FA in the CFA, place deep fires on threat forces beyond the battalion TF sectors, cover obstacles in the CF sector, destroy enemy electronic jammers, provide counterfire, and suppress enemy air defense.

□ All FA assets will be considered for mass fire missions when large concentrations of enemy forces present a vulnerable target.

In organizing the CF field artillery for combat the FSCOORD considers both the value of providing massed fires and the need for responsiveness to battalion task forces. Although normally one FA battalion is placed in direct support of a brigade, because of the wide frontages, lack of maneuver combat power, and fluid nature of the CF fight, the FSCOORD has recommended that *one FA battalion be placed in direct support of each task force/squadron*. Since there are only three 155-mm battalions available, the FSCOORD recommends that the nondivisional 8-inch battalion be used as the fourth DS battalion. To provide each maneuver battalion with the *most responsive* fires, batteries are cross attached so that three composite battalions are formed—each with two 155-mm and one 8-inch battery. (The DS battalion from the separate mech brigade will be kept pure and the howitzer battery from the ACR squadron will be attached to the squadron's DS battalion.)

One pure 8-in battalion (the divisional battalion) and the 175-mm battalion are given the mission of GS to the CF. This provides immediately responsive fire support with which the CF commander can influence the battle. The three DS battalions in the MBA are placed in forward supplementary positions near the FEBA. They will begin to augment the fires of the covering force as the fight approaches the MBA.

FA should not be positioned farther forward in the CFA than is needed to fire on those targets that CF elements can accurately locate. This is primarily a function of the terrain, the employment of division artillery target acquisition assets, and the division's all-source intelligence capability. Once this distance is determined, the FSCOORD will select position areas for the GS FA and will give general positioning guidance to DS battalion commanders. Primary and alternate positions must be selected and coordinated early so that survey and prestocking of ammunition can be arranged.

The FSCOORD will also recommend positioning of the CF target acquisition assets. This is done in coordination with the CF S2, and is based on his analysis of terrain and avenues of approach.

Coordination between the CF artillery HQ and the MBA division artillery TOC will be extremely important. The coordination and exchange of information will include such areas as:

- the interchange of targets and targeting information,
- the status of the CFA battle,
- MBA positioning information for CF FA units and any changes to previous orders, and
- logistics information and resupply requests.

Normally, the CF artillery headquarters will locate with or very near the CF headquarters to facilitate plans and coordination.

Due to the highly fluid nature of the CF operation all CAS sorties will be held at CF HQ. CAS will be used to destroy massed threat armor forces, air defense, and indirect fire systems. Likely targets include:

- second echelon elements of enemy regiments or second echelon divisions moving into the battle area;
- units that have collected in defiles and choke points;
- forces massed in assembly areas or assault positions;
- elements breaking through or outflanking friendly CF positions;
- enemy mortar, FA, and air defense positions; and
- command posts and electronic jammers.

In any case, most targets will be fleeting and will demand rapid requests and decisions. TF FSCOORD's and S3 ahrs, assisted by TACP's, must search for potential CAS targets and plan how CAS will be requested, who will control the strike, and how it will be coordinated.

Aircraft should be loaded with antiarmor munitions (30-mm cannon, Maverick,

Rockeye, etc.). A portion should be placed on ground alert as soon as hostilities begin.

If FA or mortars are to be used to mark CAS targets, this must be coordinated with the firing unit, the ALO, and CF HQ.

Field artillery may furnish fires to suppress enemy air defense. Primary sources of targets include:

- Army aviation units,
- USAF sources,
- FIST observers, and
- division all-source intelligence center.

□ **Fire Support Coordinating Measures**

To facilitate coordination and enhance responsiveness of indirect fires, the FSCoord will recommend that the maneuver commander establish fire support coordinating measures to open portions of the battlefield to supporting fires without additional coordination.

In the CFA, opening as much of the battlefield as possible will facilitate rapid target engagement by fire support assets.

Corps will establish a fire support coordination line (FSCL) to open the battlefield to attack by any weapons system beyond the line without additional coordination.

The covering force commander may establish a coordinated fire line to allow conventional surface fire support weapons (mortars, FA NGF) to fire upon any target beyond the CFL without additional coordination. The CFL must be kept as close as possible to the frontlines and continuously moved toward friendly positions.

5-8. How to Support a Battalion Task Force in the Covering Force Area

Task force 1-3 Armor, as a part of the division covering force, has been given the mission to "delay in sector." The task force commander must slow and defeat as much of the enemy as possible, without losing the

integrity of his force. His goal is to deceive the enemy as to the location of the main battle area and cause the enemy to deploy and reveal the location of their main thrust and to reduce their combat power as much as possible.

The task force commander can expect the enemy to approach in multiple columns preceded by reconnaissance elements, attempt to bypass defensive positions, and maintain the momentum of his advance. As the task force commander has success in stripping away the reconnaissance units, he can expect enemy advanced guard elements to conduct hasty attacks to fix and envelop his positions.

The terrain will be exploited by the task force commander to insure that he uses every advantage of knowing the wrinkles in the ground—where he can get off first round surprise flanking direct fires as well as where best to employ indirect fires. The task force commander is particularly interested in terrain choke points where he can best use massed indirect fires, including scatterable mines, to slow the enemy and increase the target servicing time for his direct fire weapons.

The FSCoord is responsible for coordination of all fire support in the TF sector. He advises the commander on the status of enemy and friendly fire support means. He assists the commander in wargaming enemy and friendly actions and reactions to determine the best scheme of defense and plan of fire support for the situation.

For this mission, the task force commander has the following major assets available:

Tank heavy task force

2 tank companies

1 mechanized infantry company
(with 2 TOW's)

1 combat support company (with 4
TOW's atch)

Fire support

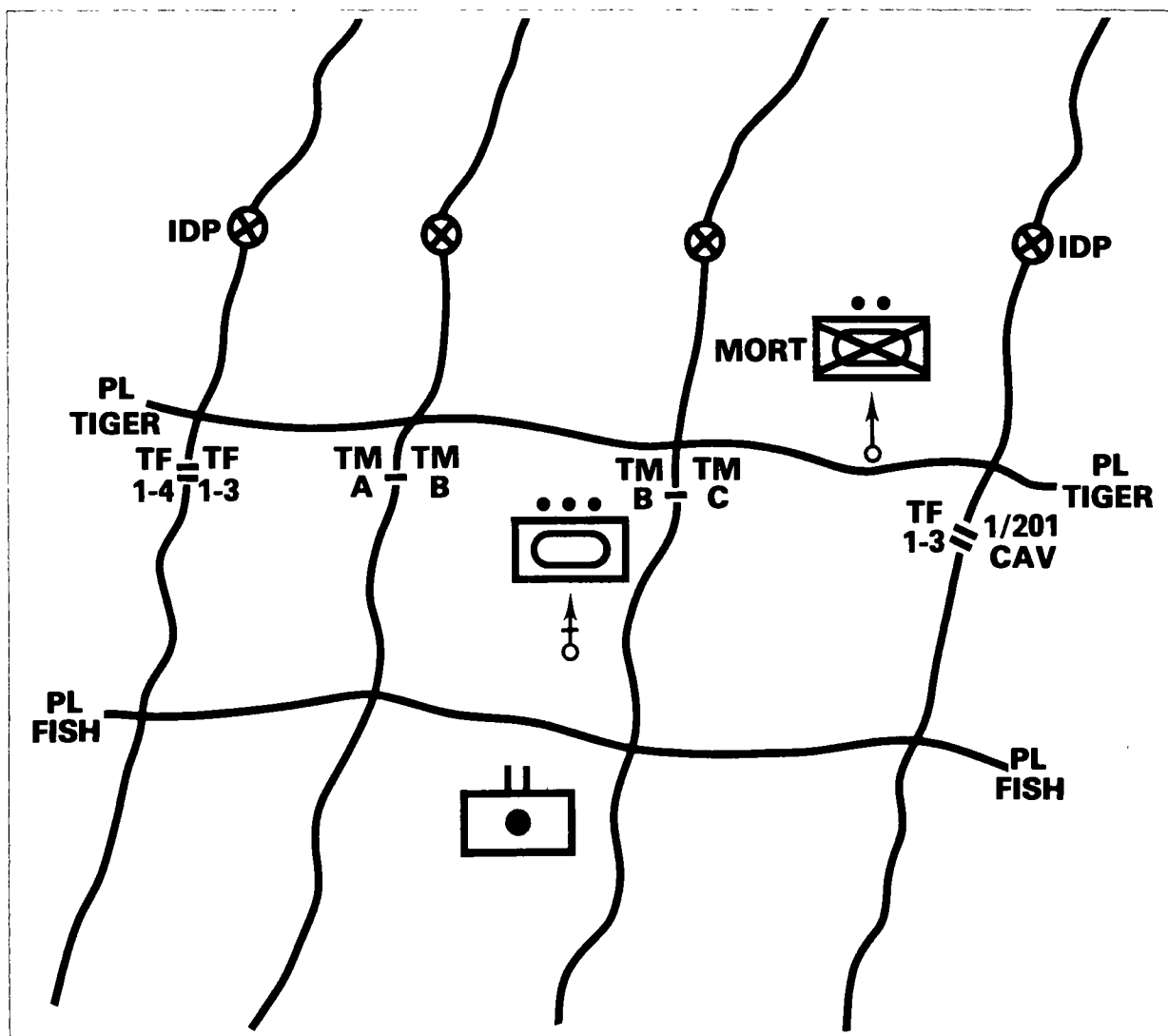
1 company mortar section (in mech co)

1 battalion mortar platoon (bn cbt spt co)
 1 FA battalion (DS)
 Engineers
 1 platoon (DS)

Based on his mission analysis and wargaming with the S3 and FSCoord, the task force commander fits his teams to the terrain, establishing sectors of responsibility for each team. Team A receives the narrowest

sector on the most dangerous avenue of approach. The TF commander identifies battle positions in depth and further refines his concept of the operations. Included in this concept are targets critical to the force and guidance on where and when to mass fires, both direct and indirect. The commander will identify these critical targets with the target numbers allocated to this task force and disseminate them to subordinate elements and fire support units.

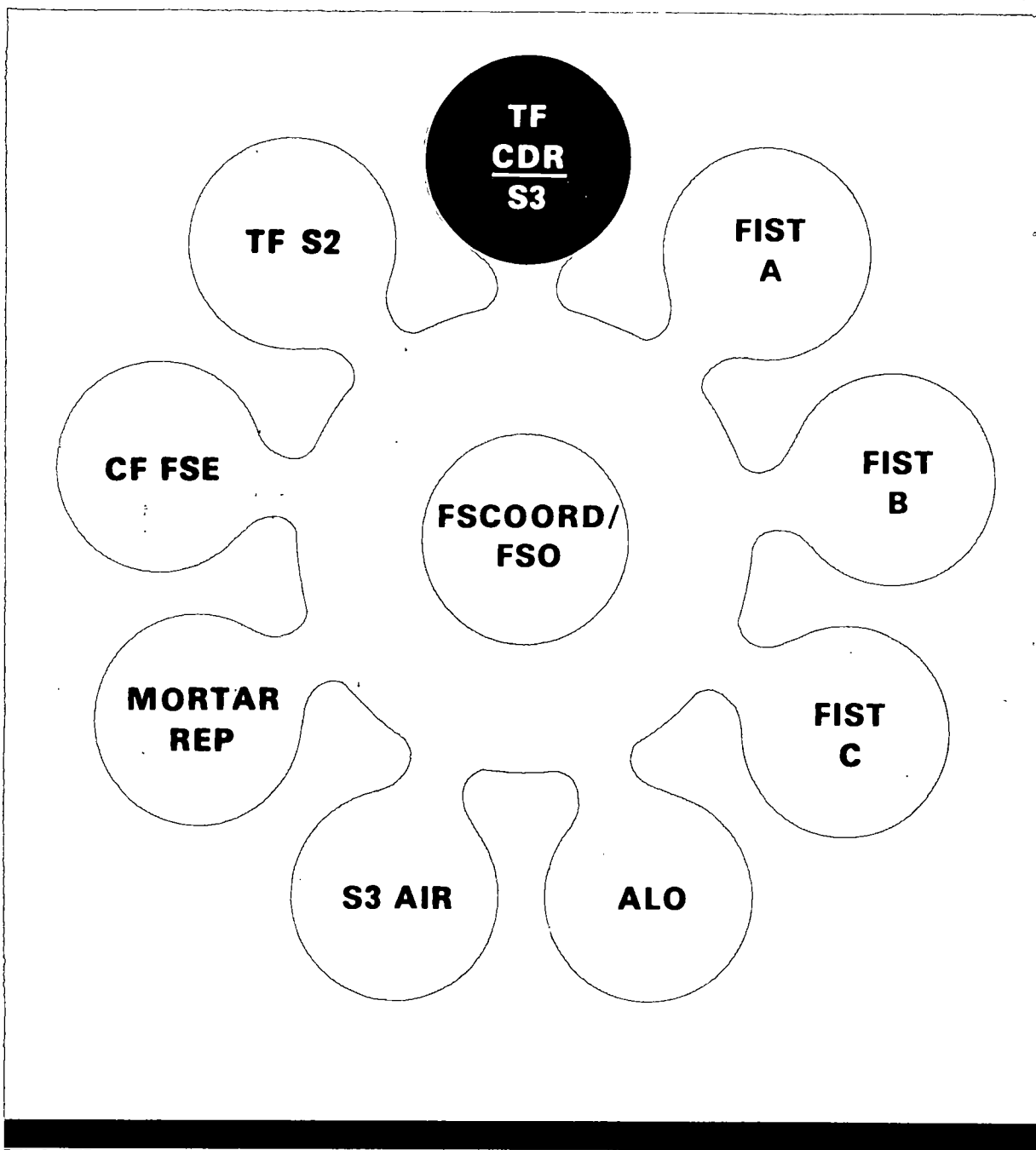
FIGURE 5-6. TASK FORCE IN THE CFA.



As a result of his concept, the TF commander has distributed his assets as shown in figure 5-6.

The FSCOORD's contacts in the planning and coordinating of fire support are shown in figure 5-7.

FIGURE 5-7. TASK FORCE FS CONTACTS IN CFA.



The FSCOORD for the battalion TF is the commander of the DS FA battalion. The FSO at the maneuver battalion, in this case, becomes the assistant FSCOORD. The FSCOORD works directly with the TF commander to insure that fire support is properly coordinated and contributes as much as possible to the combat power of the TF.

The FSCOORD must aid the commander in determining fire support tasks to be accomplished at TF level, recommend the best way to accomplish these, pass on assets and guidance to the FIST chiefs, evaluate and resolve conflicts. He then refines the plans and requests of the FIST chiefs and passes all targets to the appropriate fire support delivery means.

☐ Specific Fire Support Tasks in a Covering Force Battalion

Most fires here will be delivered in direct support of engaged maneuver companies. (In the CFA, maneuver company/teams will normally be assigned defensive sectors delineated by company boundaries.) Fires supporting engaged teams must be planned by the FIST's based on guidance from the TF commander, the FSCOORD, and his team commander.

The TF FSCOORD will be especially interested in:

- ☐ Fires delivered on enemy forces beyond the direct fire range of company/teams.
- ☐ Massed indirect fire to destroy large concentrations of enemy forces.
- ☐ Fires, including smoke, to cover the disengagement and repositioning of maneuver elements.
- ☐ Fires to cover obstacles in the task force sector.

Fire support assets available *at TF level* include:

- ☐ the battalion mortar platoon,
- ☐ DS FA battalion (two 155-mm and one 8-in batteries),
- ☐ covering force GS FA fires, and
- ☐ additional support from MBA FA battalions within range.

The battalion mortars will be used almost exclusively in close support of engaged companies. The platoon will be placed in GS of the battalion with priority of fires given initially to Team A. The company mortar fires from Team C (mech) will be planned and controlled by the FIST chief of Team C.

All mortars should be positioned in defilade, hardened as well as possible, and should be prepared to move by echelon to thoroughly reconnoitered alternate positions.

The DS FA battalion will also provide close support fires for maneuver companies. The FSCOORD, however, must concentrate on planning fires on targets critical to the battalion. He must insure that the following FA fires are planned:

- ☐ massed fires of battalions on potential choke points and assault areas,
- ☐ fires on approach routes beyond the direct fire range of the company/teams, and
- ☐ fires to cover disengagement and repositioning of company/teams.

The TF commander, S3, and the FSCOORD identify these targets and assign them target numbers. The FSCOORD then forwards these target numbers to the DS battalion FDC for planning. Those targets falling into company sectors are immediately coordinated with the appropriate FIST.

The DS battalion is positioned in depth with range beyond the IDP/LC not exceeding the target acquisition range of the force. Primary positioning considerations here are protection, ability to mass and shift fires, and minimizing of displacement. Units must be able to displace quickly along previously reconnoitered routes. Batteries should have from 2 to 5 km of lateral separation and displacement within battalions will normally be by echelon.

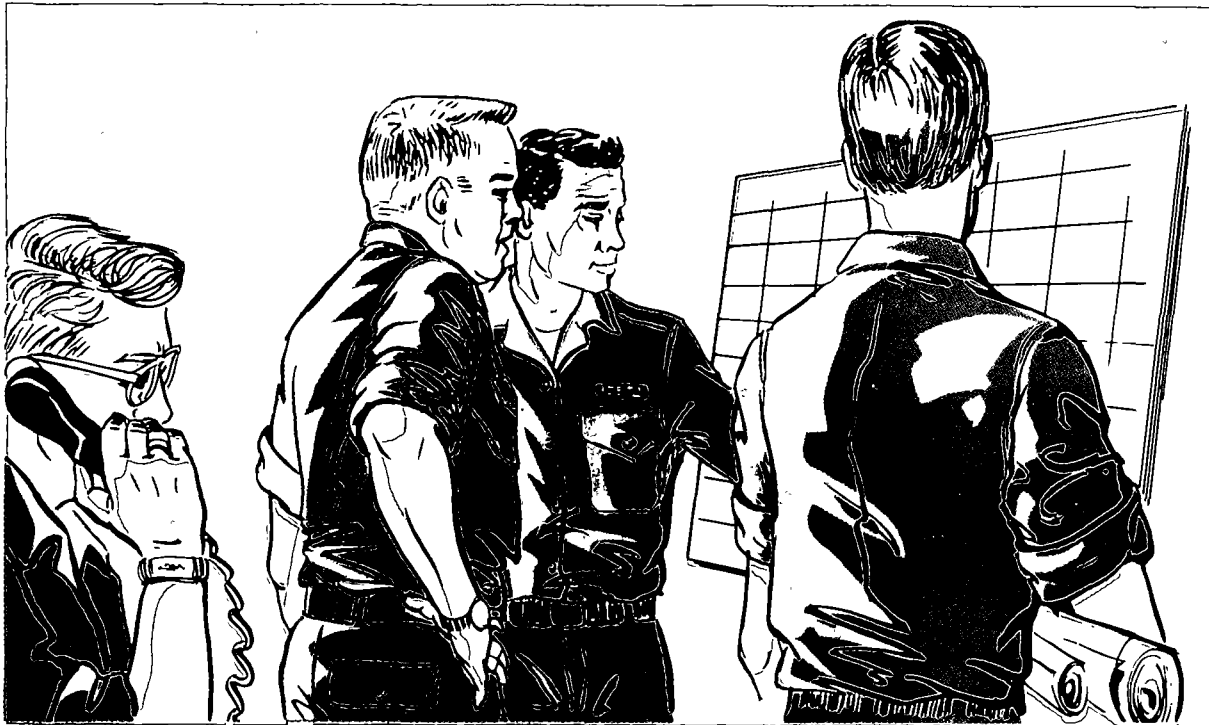
☐ Close Air Support

Although CAS sorties will seldom be distributed to CFA battalion task forces, these units must be ready to request and use CAS when appropriate targets appear. FSCOORD's must look for likely choke

points where armor units will mass. Details such as how the CAS will be requested, who will control the strike, and how the target will be marked must be worked out in advance between the FSCOORD, the TACP, and the FIST's.

□ Coordination

In the CFA each battalion TF should establish its own CFL. The FSCOORD must work closely with the battalion TF commander to insure that the CFL is established, distributed, and that it is kept as close to the forward units as possible to insure more responsive and effective fire support.



When the battalion commander, S3, and FSCOORD completed their major planning activities, the battalion commander went to meet his company team commanders as they moved into their sectors. The battalion commander reviewed, with the Team A commander, his mission to delay in sector and identified several significant issues:

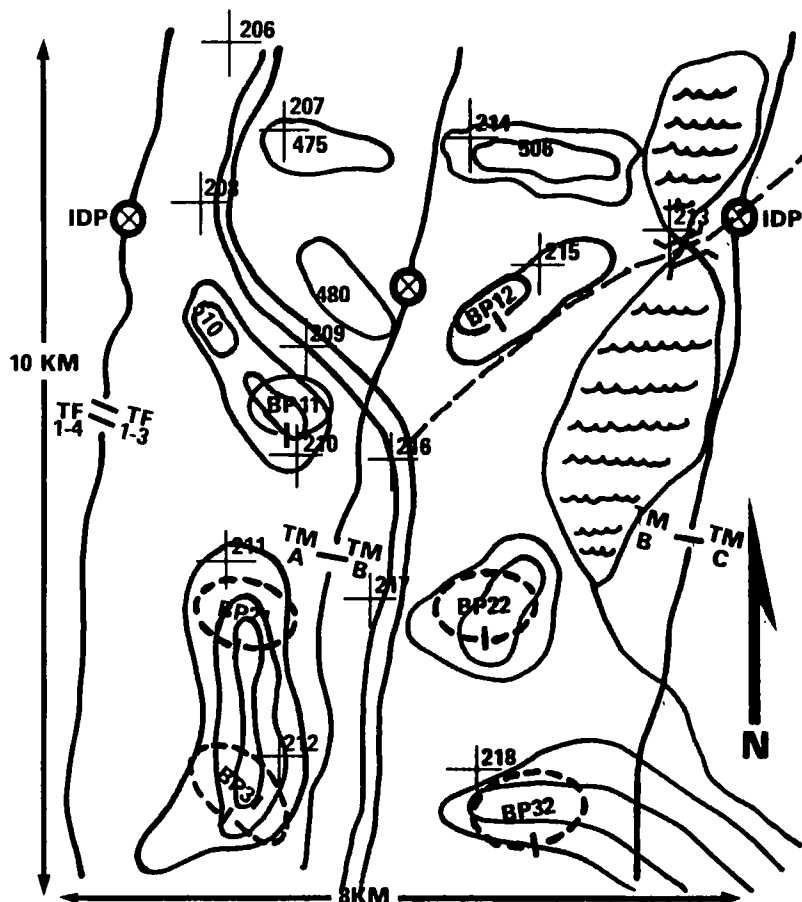
FIGURE 5-8. TASK FORCE TARGETS.

"Team A is covering the most likely high speed avenue of approach into our sector initially. Make sure you get some TOW's out on that ridge around Hill 510 to give us early warning and provide long range fires on leading recon elements as they come around that bend. Send an FO with them to call for FA and mortars as far out as possible.

"Shoot your direct fire weapons when you can get the best long range fire. Integrate that with FA and mortars to slow him down enough so you can engage as many vehicles as possible.

"I have planned FA on Targets 206, 207, 208, and 209—the most likely approaches into your sector (fig 5-8). You'll need to determine what other targets you need to mass direct and indirect fires along that approach as the enemy gets closer to you. Pass your targets to the FSO as soon as you can. You have priority of FA and battalion mortars until the enemy gets to the road and trail junction; then priority of FA goes to Team B.

"After you have engaged the enemy north and west of Hill 475, be prepared to move battle positions back to BP 21

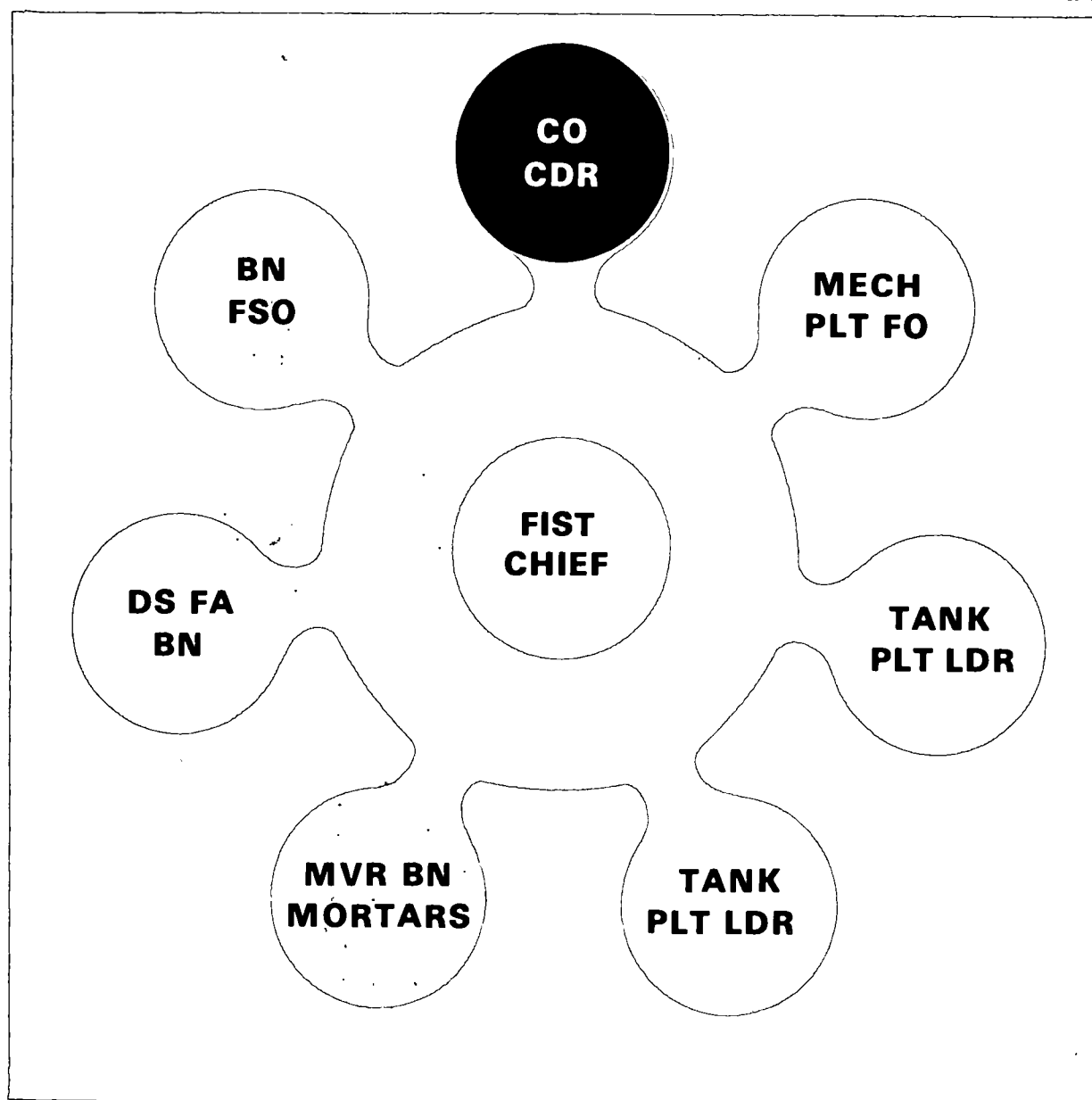


and engage in the vicinity of BP 11 and the road junction, then back to BP 31 to engage on the road near BP 22. Keep up with Team B's actions; you'll both be massing fires at the road junction and to the south. I'll get further instructions to you as things develop."

The FSCOORD at company/team level is the FIST chief. He works directly with the company commander to insure that fire support is planned and coordinated to maximize the company's combat power.

He also works very closely with the battalion FSO, who provides guidance and direction to insure that the entire battalion is getting the most benefit from the firepower available. These and his other contacts are shown in figure 5-9.

FIGURE 5-9. FIST CHIEF FIRE SUPPORT CONTACTS.



When the battalion plans have been formulated, the battalion FSO informs the company FIST chief of additional battalion critical targets in Team A sector and directs that the FIST chief plan additional massed fires between Hill 480 and BP 11 to complement the battle plan.

The company commander and the FIST chief analyze their situation and expected threat actions to determine their battle plan. The FIST chief is primarily interested in the following fire support tasks:

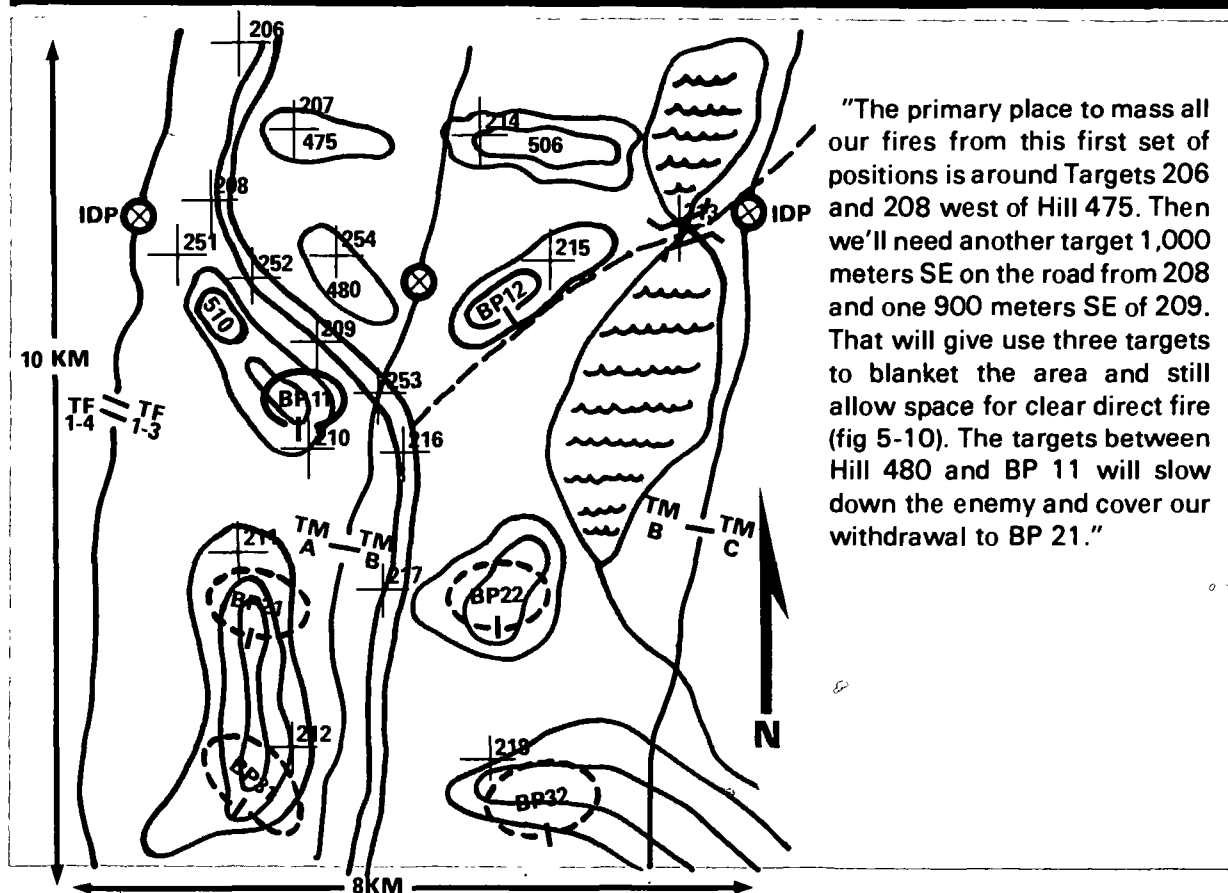
- Cover obstacles.
- Obscure and suppress threat overwatch positions.
- Deny the enemy free use of covered routes of approach and assault positions.
- Blind, slow, separate, and isolate

advancing enemy elements so they spend more time in our best direct fire engagement areas.

- Aid friendly forces in disengagement and repositioning.

As the battalion commander departed, the team commander and his FIST chief (who was present for the battalion commander's instructions) further analyzed the situation. The team commander decided to put a tank platoon and two TOW sections northwest up the ridge to engage the enemy at the greatest possible range. The remainder of the team will engage from BP 11. The team commander directed the FIST chief to insure that there were smoke and HE fire planned to facilitate disengaging the forward tank platoon when it moved out to BP 21.

FIGURE 5-10. TASK FORCE TARGETS AND THOSE ADDED BY TEAM A.

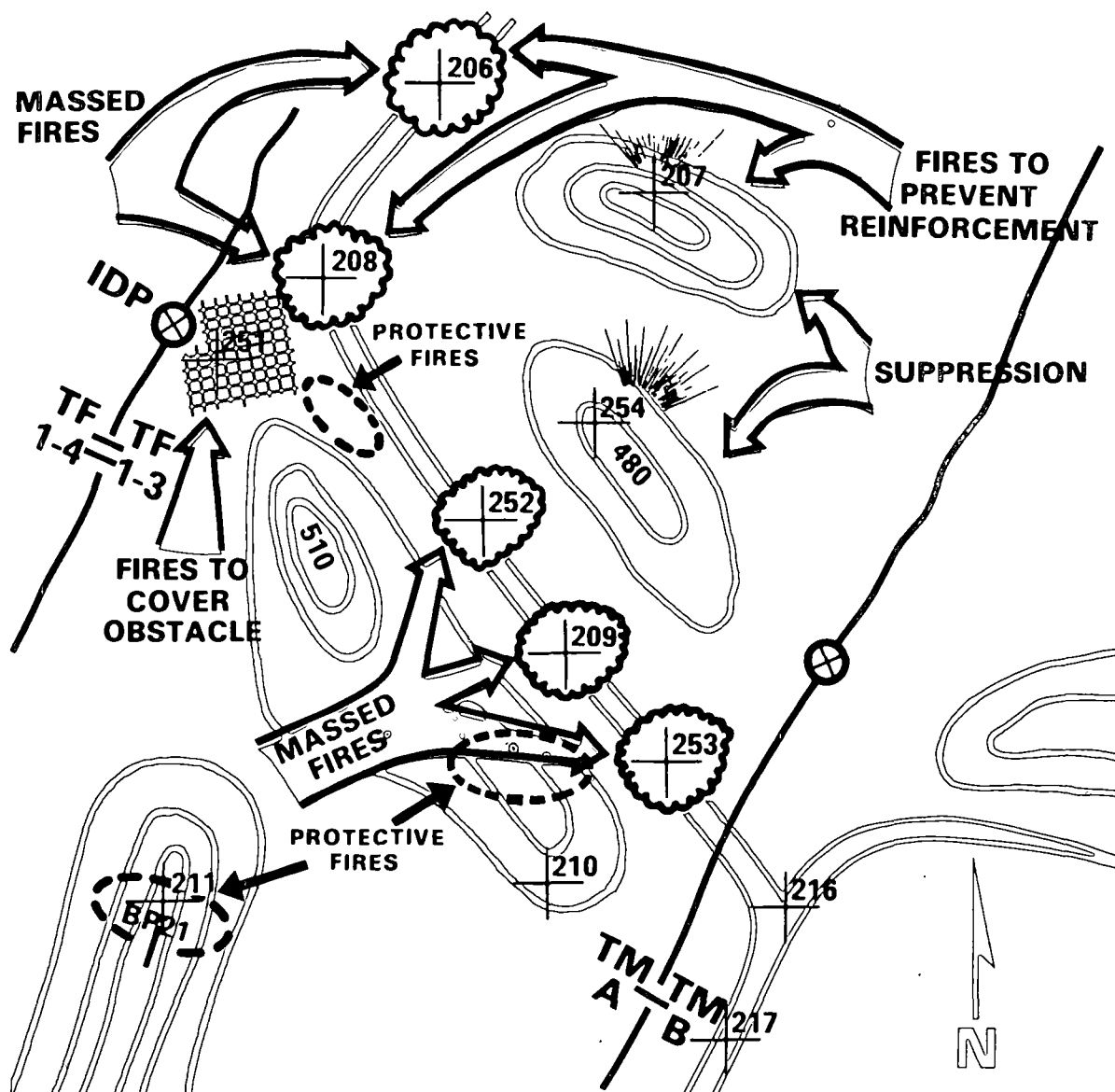


The team commander and the FIST chief examine each of their subsequent positions back to the FEBA and refine the fires for each. They also consider what modifications will be necessary if the plan does not develop as they expect it to. The FIST chief then finalizes the company team targets, passes

those added to the TF FSO, and disseminates all of them to each platoon leader and platoon FO.

Included in the fires planned to support the initial engagements at the IDP were (fig 5-11):

FIGURE 5-11. TEAM A, 1-3 ARMOR, COVERING FORCE SECTOR.



- Mass fires to support the 1st Platoon in the first engagement area at Targets 206 and 208.
- Suppressive fires on Hill 480 (Target 254) and on the covered assault position behind Hill 480 (shift from Target 254).
- Fires to cover the obstacle (abatis) west of the 1st Platoon positions (Target 251).
- Mass fires in the big defile—Targets 252, 209, and 253.
- Fires beyond (northwest of) the big defile to attack at long range and prevent enemy reinforcement (Targets 206, 207, and 208).
- Fire to the front and flanks of Hill 251, BP 11, and BP 21 to support repositioning forces (to be fired as shifts from Targets 251, 210, and 211).

The following is an example of how the covering force fight in Team A, 1-3 Armor, might develop.

The enemy leads with reconnaissance elements including motorcycles, three PT 76 tanks, and four BRDM scout cars. The motorcycles are about 3,000 meters ahead of the tanks and BRDM's and the platoon leader lets them pass the bend in the road. (They will be attacked by the FIST chief with mortars and FA HE in the vicinity of Target 252 at the same time the tank platoon leader on Hill 510 attacks the tanks and BRDM's near Target 208.) (Refer to fig 5-12.)

As the PT 76's and BRDM's come within observed fire range just beyond Target 206 (about 3,500 meters) the platoon leader calls for FA and 107-mm mortar HE-VT and DPICM on 206. The fires are timed to land on 206 just as the vehicles hit that point. When the platoon leader sees the vehicles reach the 3,000-meter point, he opens fire on the column with his TOW's. This first volley destroys two PT 76's and one scout car. The indirect fires landing on the column cause the remaining vehicles to button up and knock out one BRDM. Another BRDM and the remaining PT 76 are destroyed by the friendly tanks.

In the meantime, the bn FSO observing some other recon elements approaching Hill 475, called for HE and smoke on Target 207 to suppress and obscure these forces. The FSO

shifted some fires west of 207 to obscure following advance guard elements as they approach the bend. The two remaining BRDM's move behind Hill 480 where they are engaged with FA and mortars by the Team A FIST chief. (Team A (-) on battle position 11 has still not revealed its position.)

Enemy fire forces the tank platoon and TOW's to withdraw from Hill 510 to BP 21. They withdraw under the cover of protective HE and smoke fires to the front and flanks of Hill 510. The FIST chief controls these fires as the tank platoon moves back.

Team A (-) is now preparing to engage advanced guard elements as they emerge from the smoke and dust around the bend. Two platoons of tanks turn south toward Hill 510 and the abatis to the west probing for a gap in the defense; their forward movement is stopped by DPICM and the field artillery scatterable mines as they hit the obstacle.

Another platoon of tanks and BMP's from the advanced guard rounds the bend and the FIST chief attacks them vicinity Target 208 with HE-VT and DPICM. The remainder of the advance guard battalion (about 20 tanks and 7-10 BMP's) follow about 1,500 meters behind the lead advanced guard elements.

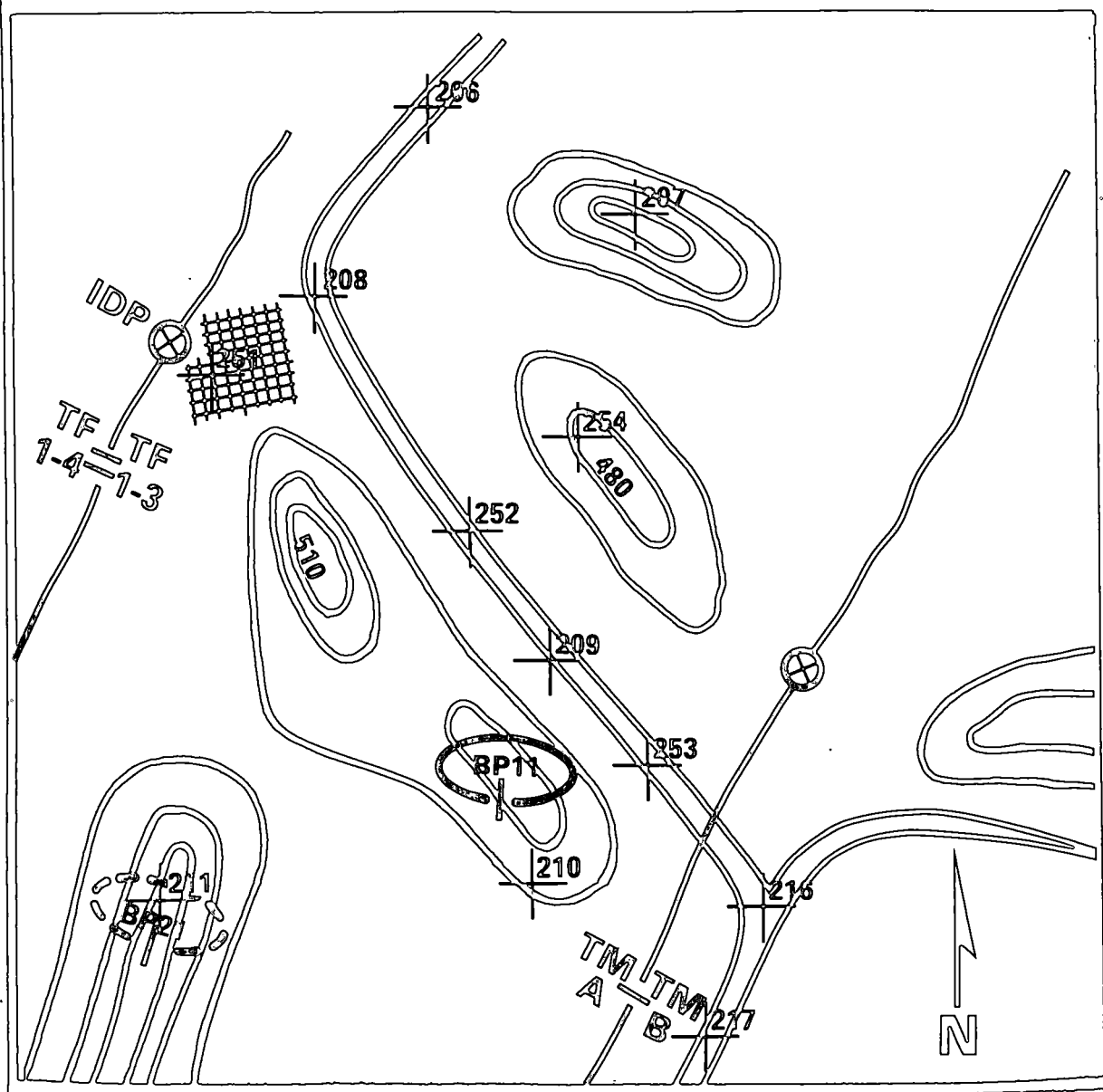
The battalion TF commander realizes that Team A will have some difficulty handling all these vehicles themselves. Team B's left (west) platoon is unengaged and available to assist so the TF commander directs that they respond to control of Team A for this engagement. Team A commander orients the Team B platoon toward the defile and directs it to fire there when lead enemy vehicles reach the south end (near Target 253). Team A will mass both direct and indirect fires on Targets 252 and 209 simultaneously.

As the lead elements of the advanced guard battalion pass Target 208, the FIST chief calls for HE-VT and DPICM. The HAW's with Team A on BP 11 open up at 2,500 meters on these elements. As the HAW's hit, tanks fire on enemy tanks nearing Target 209, and lead enemy elements are engaged with HE-VT and DPICM; 1st platoon, Team B, tanks fire at Target 253. The FIST chief

adjusts indirect fires to the north of Targets 209, 252, and 253 to prevent initial engagement smoke and obscuration from hindering direct fire, as well as suppressing

vehicles that attempt to maneuver to the north. These fires also obscure enemy overwatch elements on Hill 480, vicinity of Target 254.

FIGURE 5-12. TARGETS AND BP'S IN TEAM A'S SECTOR.



During this engagement, the FIST chief detects movement and firing from Hill 475

(Target 207) to the north. He determines these fires to be from the accompanying artillery

with the advance guard. He requests the battalion FSO to engage elements on Target 207.

When the engagement terminates, Team A sees that about 15 tanks and 8 BMP's have been destroyed. A few tanks and one BMP have proceeded to the road junction where they are destroyed by Team B fires.

Team A begins to receive some significant enemy indirect fire, its position is known, and the remainder of the advanced guard regiment is only 4,000-5,000 meters away. The battalion TF commander directs Team A to move to BP 21 and engage the oncoming enemy force at the road junction.

The battalion FSO assists the Team A FIST chief to control disengaging and withdrawal fires, then shifts priority of FA fires to Team B for the next engagement. The FSO coordinates with the company commander to insure that the battalion mortar platoon begins moving by echelon to provide continuous support. He also determines the next probable massed fire targets to be Targets 253, 216, and 217 in that order and passes that information to the DS battalion FDC.

☐ Principles Applied

In the covering force example:

- ☐ The enemy was engaged with long range indirect and direct fires.
- ☐ The enemy was slowed to allow longer target servicing time.
- ☐ The obstacle was covered by fire to increase its effectiveness.
- ☐ Enemy overwatch units were suppressed.
- ☐ Teamwork between the FIST and FSO suppressed deep targets.
- ☐ Priority of fires was changed when required.

5-9. Fire Support in the Main Battle Area (MBA)

☐ Deployment of Forces

The division deploys the bulk of its combat

power in the MBA to insure coverage of the most defensible terrain in the sector and to prepare for the decisive battle by the forward committed brigades. Mechanized infantry, tank, and fire support systems are allocated to the forward committed brigades to accomplish their mission of stopping the enemy before he reaches the brigade rear boundary.

A few maneuver and fire support assets are retained at division level to influence the battle as it develops. If the commander can determine where in the MBA the major battle will be fought (based on restrictive terrain or accurate intelligence) he may weight that area before the battle begins. If, on the other hand, the terrain does not restrict the enemy's options or intelligence is less complete, the commander will deploy a relatively balanced force. After he determines the location of the enemy main thrust, he will "concentrate" forces at the critical time and place.

☐ Control of Fire Support in the MBA

Control of fire support in the MBA is managed on behalf of the commander by the division FSCOORD (the division artillery commander) and the division fire support element. All fire support systems, field artillery, close air support, naval gunfire, and mortars at lower levels are managed by the fire support element at each maneuver headquarters.

☐ Supporting the Defense in the MBA - General Situation

Reviewing the situation as established in paragraph 5-7, a US mechanized division has received the mission to "defend in sector." At that time corps attached the corps ACR headquarters and one squadron and a field artillery brigade (three 155-mm how, SP bns; one 8-in how, SP bn; and one 175-mm gun, SP bn) to the division. All of these units were committed in the CFA. An attack helicopter company is OPCON to the division. The

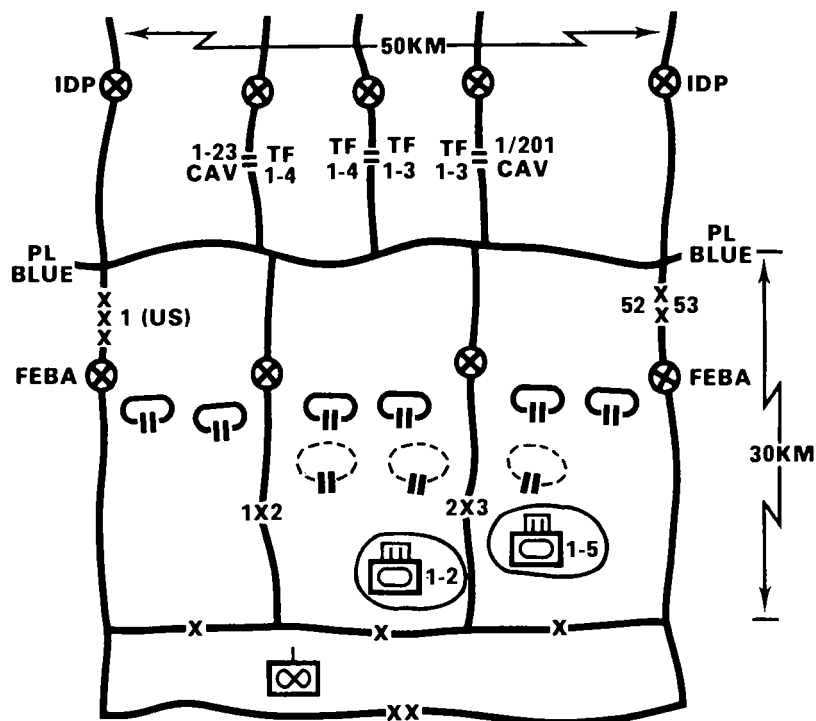
division is defending on relatively unrestrictive terrain and the current intelligence situation precludes determining the location of the enemy's main thrust prior to the battle. The commander expects that the enemy may attempt a breakthrough in his sector with up to four divisions—two in the first echelon and two in the second echelon. The best avenue of approach is in the center sector, and it is most likely that the enemy will make his main thrust there. However, major elements of the enemy force could approach on avenues to the flanks of the center sector.

After analyzing his mission, the sector, possible enemy actions, and troops and fire

support available, the commander allocated his forces. He provided two mechanized battalions in each brigade sector, four battalions to the covering force, and retained two tank heavy task forces in reserve. The covering force will cause the enemy to mass for the breakthrough and provide the commander with significant information on when and where to concentrate for the decisive battle in the MBA. The commander anticipates using covering force elements—both maneuver and fire support—to assist in concentrating in the MBA to achieve the necessary combat power to defeat the enemy.

The division operations overlay is shown in figure 5-13.

FIGURE 5-13. DIVISION DEFENSE OPERATIONS OVERLAY.

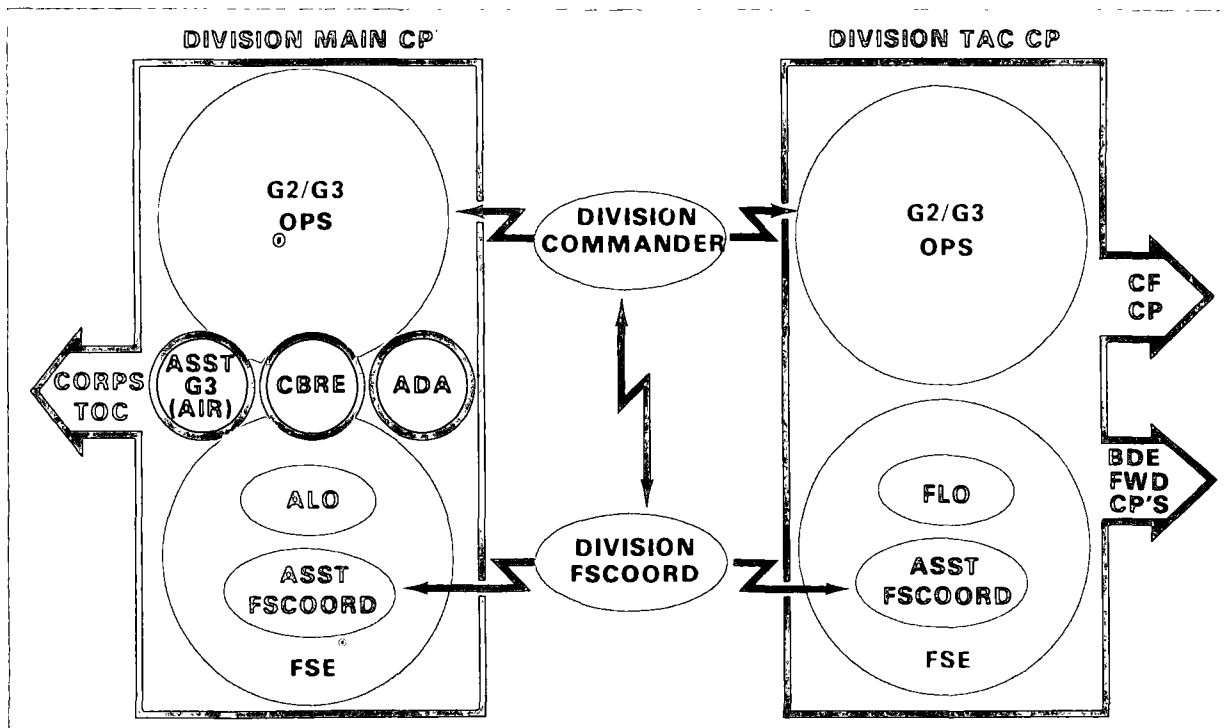


□ FSCoord Activities

As FSCoord for the division, the div arty commander is responsible for coordination of fire support *throughout* the division sector. Through his representative in the CFA (the FA bde commander in our example) and

through the G2 and G3, the div arty commander follows the covering force fight very closely. His contacts and those of the division commander are shown in figure 5-14. Also shown are those agencies within each CP who get directly involved in fire support.

FIGURE 5-14. FS CONTACTS IN THE MAIN AND TAG CP'S.



As MBA FSCoord the div arty commander must insure that CAS and the bulk of the FA assets are available to attack threat forces as they mass to break through the MBA.

Just as the division commander will concentrate his maneuver forces at the decisive time and place, the FSCoord must be able to focus his fire support effort on the threat main thrust wherever it occurs. At the same time, he must retain some flexibility to shift support to the economy of force sector should a major threat develop there.

Long before the covering force fight begins, the FSCoord develops recommendations for MBA fire support. Wargaming the enemy main thrust against each brigade sector, he determines the following fire support tasks for the MBA fight:

- Furnish close support fires to the brigades.
- Reduce the effectiveness of threat supporting fires.
- Suppress enemy air defense.
- Cover obstacles in division zone.
- Fire on approaching enemy elements at maximum range possible.

- ☐ Isolate the enemy in the penetration.
- ☐ Mass fires to destroy massed enemy forces.

☐ Fire Support Assets in the MBA

FA: As the covering force fight begins, the bulk of the division's FA assets will be positioned in the CFA. The three 155-mm battalions DS to the MBA brigades will be in forward supplementary positions near the FEBA. Before the enemy reaches the MBA, however, all the division's FA assets will be positioned in the MBA and will be under div arty control. The div arty commander will usually have an FA brigade HQ to assist in control of the MBA fight. In our example, FA assets available in the MBA will be:

Div arty H&H btry
 Target acquisition btry
 FA bde H&H btry
 5 - 155-mm SP bns (2 nondiv)
 2 - 8-in SP bns (1 nondiv)
 1 - 175-mm bn (nondiv)

(The 155-mm SP bn from the corps reserve separate mech bde will return to its parent unit at the end of the CF fight.)

CAS: Corps will distribute a number of CAS sorties to each committed division. In the example case, the division has 80 CAS sorties per day for the MBA fight.

☐ Commander's Fire Support Guidance

After the division commander, G3, and FSCOORD had developed the courses of action and analyzed them, the commander decided to organize the MBA as shown in figure 5-13. He passed the following additional fire support guidance to the FSCOORD:

"I am particularly concerned about the timely concentration of fire support for the breakthrough sector. We need to insure that our organization for combat is flexible enough to permit several options for folding in covering force field artillery to support the

threatened MBA sector.

"When we move to concentrate, units must already have a firm idea about where they're going to support the MBA. We may have to change tactical missions quickly to do it another way, if necessary. At the same time, we have to retain a good counterfire capability throughout the MBA.

"Holding most of the close air support at division will retain some flexibility for varying application in the area of concentration as well as the economy of force area. Keep abreast of the use of our attack helicopters as the situation develops to integrate necessary fire support in their operations."

☐ Field Artillery Tasks

At division level, FA tasks will include:

- ☐ massing the fires of several field artillery battalions on massed enemy forces;
- ☐ managing the counterfire program; and
- ☐ firing to suppress enemy air defense.

☐ Field Artillery Organization and Positioning

The key to understanding FA organization and positioning in the MBA is that they must accentuate flexibility before the enemy main thrust is identified. After the main thrust has been identified the main goal is the ability to mass and shift fires in the critical zone. While the fight in the CFA is in progress, FA is fairly evenly distributed across the division sector. In the example case, each CF task force/squadron has an FA battalion in direct support, each MBA brigade has a direct support battalion, and the remaining battalions are in general support of the covering force.

If no enemy main thrust develops, the relatively even balance will continue into the MBA.

- ☐ MBA brigades will be supported by habitual DS battalions.
- ☐ FA battalions back from the CFA will be assigned R or GSR missions to MBA DS battalions.

If a major thrust is identified, then the FA must be organized and positioned so that its fires focus on the major threat. The FA commander will have his staff plan for organization and positioning of FA units to support each main thrust contingency identified by the division G2.

Organization Options. There are several ways in which the FA can be organized to support a division that must defend against a breakthrough attack. Points for consideration include:

- The total number of FA battalions available.
- FA organization in the CFA. If covering forces are controlled by MBA brigades, covering force FA will probably continue to support the same brigade in the MBA as in the CFA. If a corps- or division-controlled covering force is employed, FA supporting

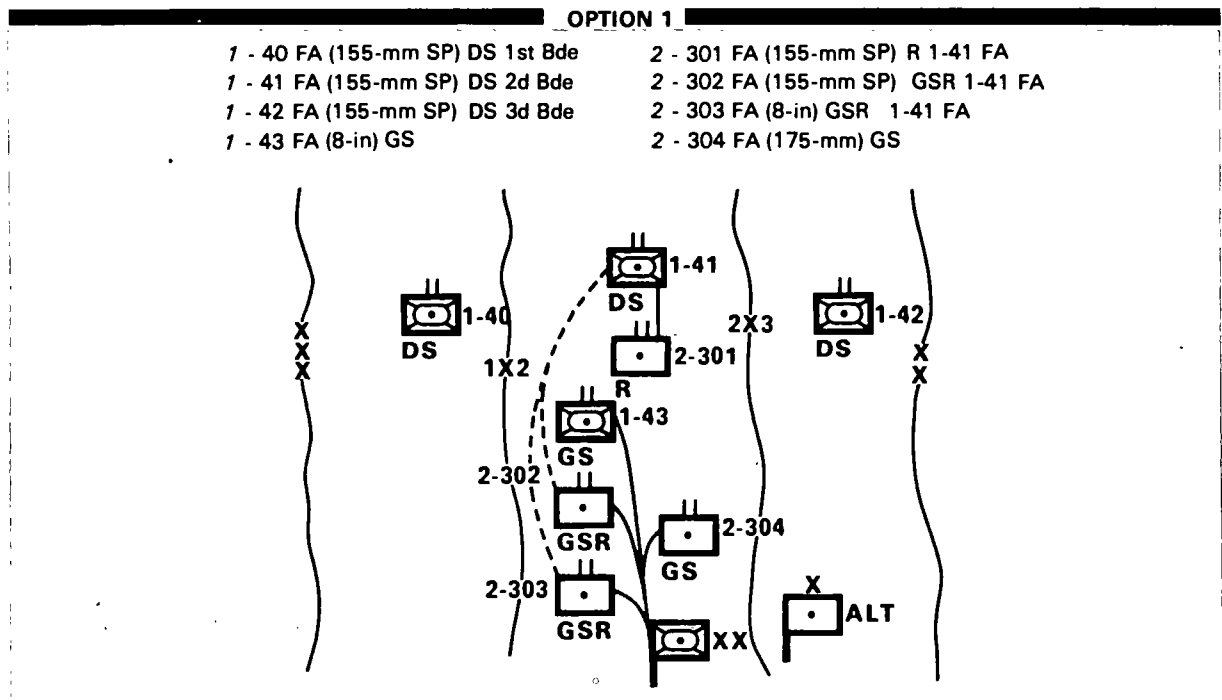
the covering force will come under division control after the CF fight.

- The availability of an FA brigade headquarters. If available, this HQ may control FA in the CFA, main thrust sector, or both.
- The location of the main thrust (flank or center of the division sector).

In our example, the covering force is controlled by division. In addition to the three FA battalions already deployed in the MBA, an FA brigade HQ and four cannon battalions will be available for the MBA fight.

Several organizational options can be used if a main thrust develops. Options 1, 2, and 3, on the following pages, are discussed in terms of a center (2d Bde) main thrust, but could also be used in the 1st Brigade or 3d Brigade should the main thrust come there.

Note: Diagram shows mission relationships—*not* positions.



In this case the 2d Brigade DS battalion has remained in control.

□ Advantages

- Retains habitual relationship between brigade and DS battalion commanders.
- Leaves div arty free for counterfire, SEAD, and other general support tasks.
- Provides alternate headquarters capability.

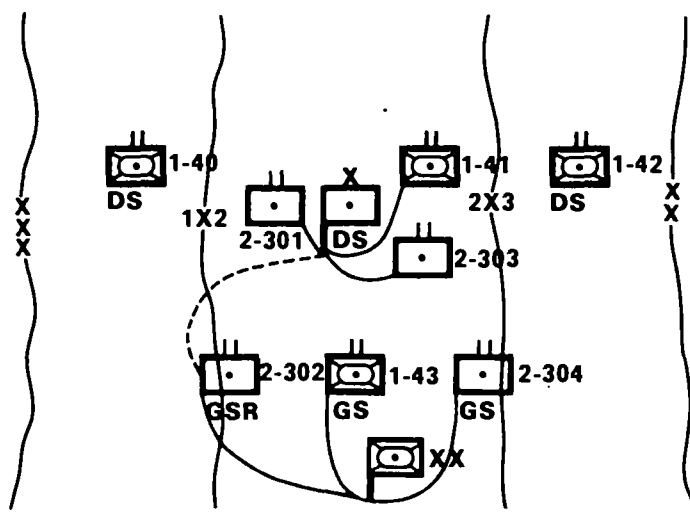
□ Disadvantages

- Places a great strain on 2d Brigade's DS Bn (that battalion would probably have to be "beefed up" with at least one additional command track and three radios).
- Makes inefficient use of the FA brigade HQ. A variation on this option would have the FA brigade HQ control the GSR battalions (the FA bde, with two bns, would be GSR to the 2d Bde's DS Bn). In this case span of control would be decreased; however, responsiveness would also decrease due to insertion of another HQ.

OPTION 2

1 - 40 FA DS 1st Bde
FA bde DS 2d Bde
1 - 41 FA
2 - 301 FA
2 - 303 FA

1 - 42 FA DS 3d Bde
1 - 43 FA GS
2 - 302 FA GSR FA bde
2 - 304 FA GS



Note: Diagram shows mission relationships—not positions.

□ Advantages

- FA brigade has command and control facilities to do the job—good use of brigade headquarters.
- Div arty free for counterfire, SEAD, and other general support tasks.

□ Disadvantages

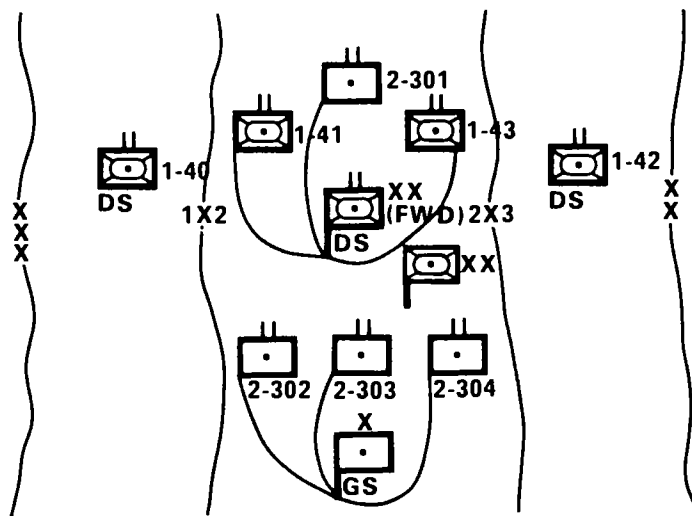
- Alters habitual relationship between 2d Brigade and its DS battalion.
- FA brigade was also used in the CFA; therefore, it will enter the DS picture at a critical and awkward time.



OPTION 3

1 - 40 FA DS 1st Bde
 Div arty forward CP
 "group" DS - 2d Bde
 1 - 41 FA
 1 - 43 FA
 2 - 301 FA
 1 - 42 FA DS 3d Bde

FA bde GS
 2 - 302 FA
 2 - 303 FA
 2 - 304 FA



Note: Diagram shows mission relationships—not positions.

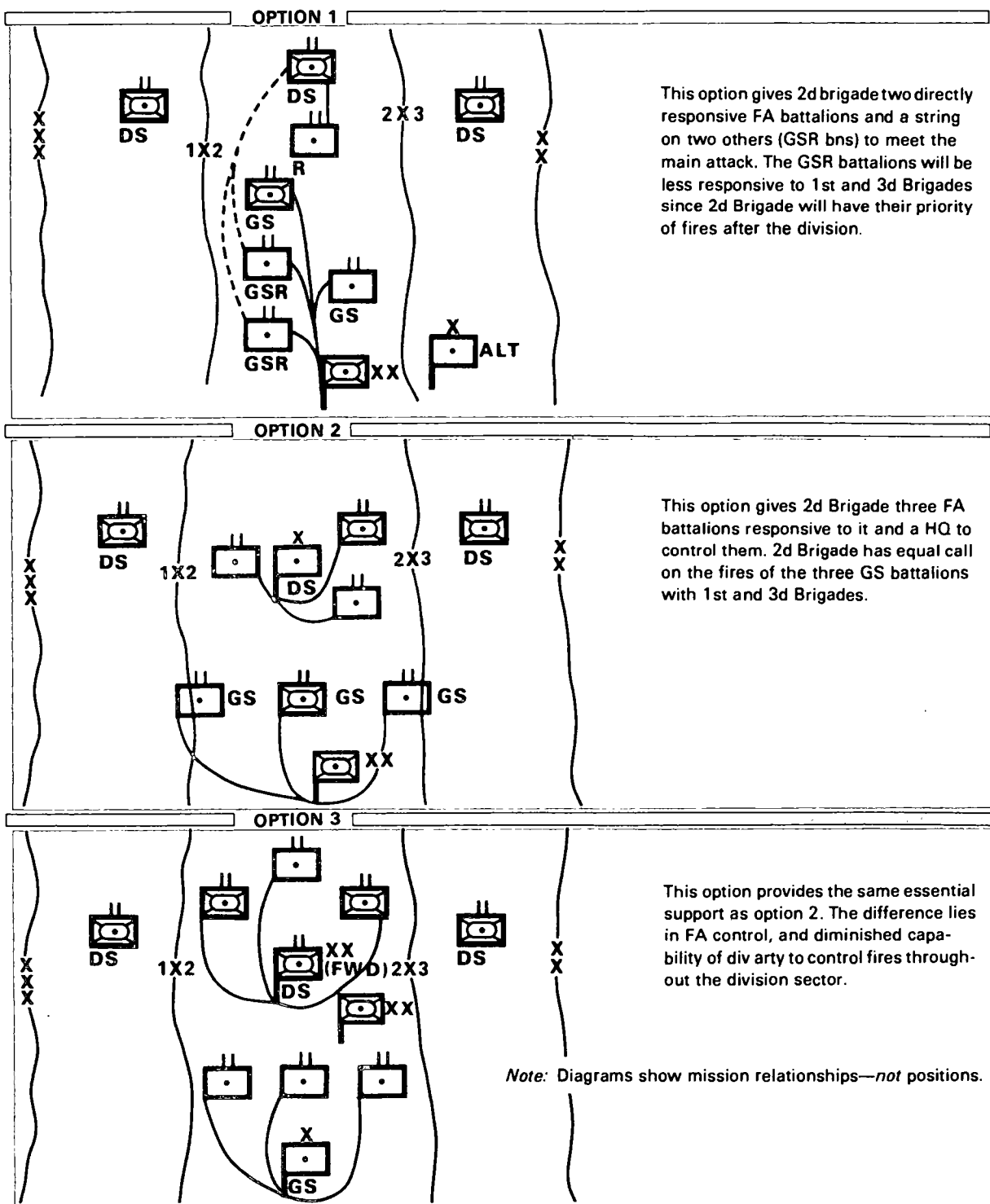
☐ **Advantages**

- ☐ Increased command and control to support 2d Brigade.
- ☐ Good use of FA brigade HQ.

☐ **Disadvantages**

- ☐ Unless quick-fire channels are established, div arty forward must go through FA brigade HQ to receive the fires of the brigade's battalions.
- ☐ Breaks up habitual relationship between 2d Brigade and DS battalion.
- ☐ Breaks up div arty TOC.

In all options, 1st and 3d Brigades have one DS battalion, and access to GS, GSR fires.



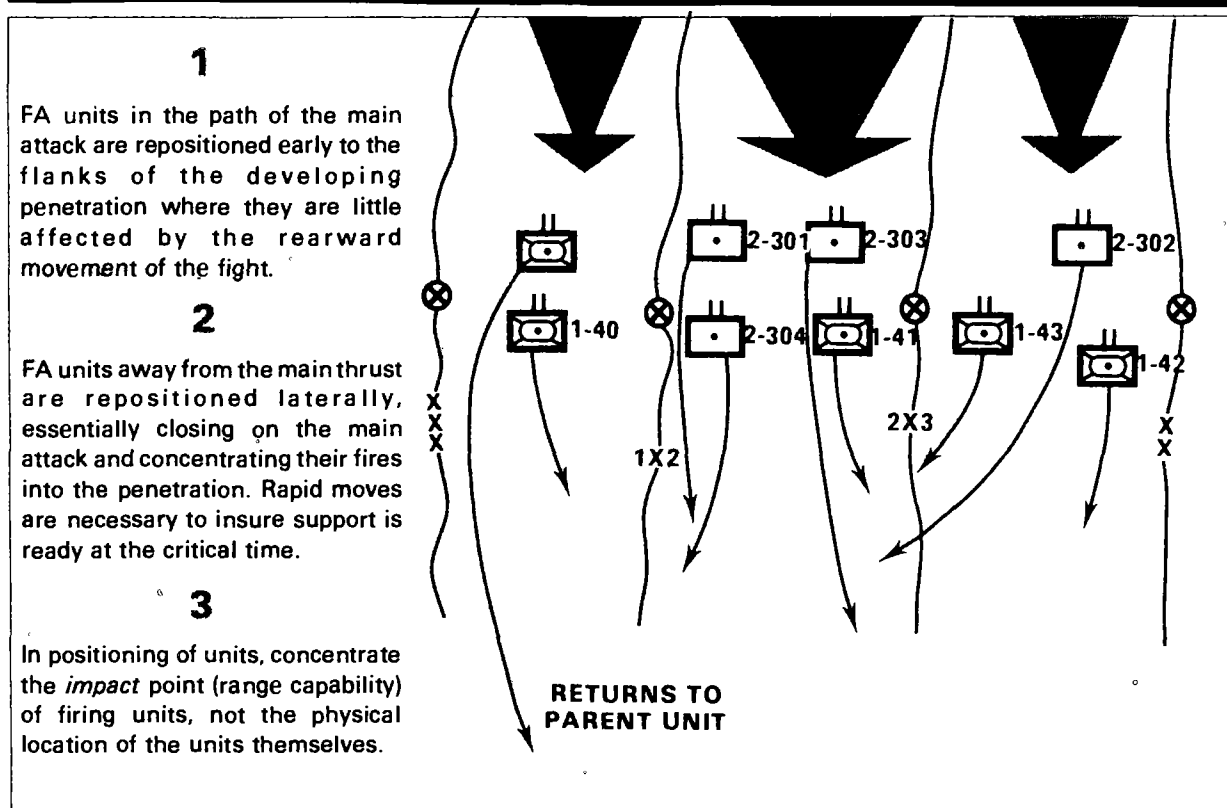
Commanders and FSCOORD's should weigh the advantages and disadvantages discussed and consider their own specific situation when organizing FA in the MBA.

FA Positioning. If there is no enemy main thrust against the division, positioning of FA units will reflect a balanced distribution. If there is a main thrust,

however, the FSCOORD will probably recommend lateral repositioning (fig 5-15) of field artillery to insure that maximum firepower can be brought to bear at the most critical point.

Lateral Repositioning Includes Three Actions:

FIGURE 5-15. LATERAL REPOSITIONING OF FA.



Lateral repositioning is an integral step in the division commander's massing of combat power. It requires a strong, integrated intelligence-gathering effort; an accurate, purposeful assessment of enemy intentions; and a will to act decisively.

☐ Situation Continued

Returning to the example scenario, the

covering force elements are now approaching Line Blue (fig 5-13). All covering force FA units are now positioned in the main battle area and the responsibility for fire support of the CF battalions is about to shift to the MBA DS battalions. The division commander, based primarily on input from the CF commander and the G2, has decided the threat's main effort will be in the center against the 2d Brigade. Because of the FA

brigade's continuing involvement in the covering force fight and because the 2d Brigade's habitual DS battalion has prepared meticulously for the MBA fight, *the div arty commander recommends that option 1 be adopted*. The 1-41 FA will continue in direct support of the 2d Brigade and have a reinforcing and two GSR battalions to assist in this effort.

☐ **Field Artillery Fire Planning**

Under this organization for combat, division level field artillery fire planning will be done in the div arty TOC. This planning will include the following.

- ☐ Preparing (and executing on order) the field artillery contribution to a counterpreparation.
- ☐ Identifying aimpoints and tentatively assigning firing units to deliver effective *massed* fires against mass targets at potential choke points, assembly areas, and other necessary sites.
- ☐ Planning and managing the division counterfire program.
- ☐ Planning fires to suppress enemy air defense.
- ☐ Planning fires to isolate enemy forces in the penetration.
- ☐ Planning fires to cover obstacles in the division zone.

☐ **FA Coordination - MBA**

Once the division commander determines the time and place for the concentration, the div arty commander and his staff prepare to execute their plan for MBA support. Prior to execution of these plans, certain actions should be taken.

- ☐ Insure that CFA artillery units understand their MBA missions.
- ☐ Coordinate MBA positions, routes, ammunition supply, and survey control for MBA FA positions.
- ☐ Reorient MBA target acquisition assets to insure proper coverage of the main thrust zone.
- ☐ Terminate 8-in/155-mm cross

attachment established for the CFA.

☐ **Close Air Support**

In the MBA the majority of the close air support will be retained at division to

- ☐ destroy massed formations,
- ☐ blunt the nose of any penetration,
- ☐ isolate the enemy's first echelon and prevent the second from joining the fight,
- ☐ stop local breakouts, and
- ☐ attack command posts and electronic jammers.

Planning. The MBA FSCOORD with the asst G3 (air) and ALO will develop a coordinated plan for the employment of CAS. Aircraft ordnance loads should be commensurate with anticipated targets but weighted in favor of antiarmor munitions; e.g., Maverick missiles, Rockeye cluster munitions, cannons loaded with a ratio of 3 to 1 AP and HEI, and 500- and 2,000-pound laser guided bombs (LGB). Mixed loads are desirable. Other stores should include fragmentation/incendiary cluster munitions for SEAD use. CAS must be integrated with FA SEAD fires to insure aircraft survivability and to allow aircraft to carry loads optimized for targets. SEAD fires will be planned in accordance with the SEAD plan from corps.

Organization. The ALO recommends to the FSCOORD how available CAS sorties should be distributed to lower echelons. Some sorties must be made immediately available to MBA brigades, but division must retain enough to facilitate massing. Fire support coordination agencies with TACP's must insure that FIST chiefs are available and capable of controlling airstrikes when FAC's are not available. Mission control details should be worked out in advance so that CAS can be employed as effectively and expeditiously as FA.

Positioning. The ALO must recommend ground or airborne alert status for sorties. Considerations affecting alert status include:

- ☐ the number and capability of identified enemy ADA units,

- overall effectiveness of the SEAD program,
- flying time to the battle area,
- weather/visibility (day or night), and
- aircraft type and ordnance carrying capability.

Excessive loiter times waste valuable CAS resources and should be used only when rapid reaction is essential. If aircraft on airborne alert are unable to strike a primary target, secondary preplanned targets should be designated.

Coordination. The FSCoord and the ALO work together to allow fighter aircraft and FA to use the same general airspace. Employing the two systems in closely coordinated operations will greatly increase the effectiveness of both. Some of the advantages are flak suppression so the flight can concentrate totally on the target, the massing of firepower to achieve a desired result, the blocking of an enemy advance or retreat, the use of artillery illumination support or target marking, and support of search and rescue operations for downed aircrews. Airspace coordination plans for FA and CAS aircraft of a generalized nature should be in being and used as a point of departure for implementation of specific missions. The ALO should suggest the desired axis of attack for fighters and is best qualified to determine timing, altitude, and lateral separation requirements.

□ The Counterpreparation.

The counterpreparation is an intense volume of prearranged fire delivered when the imminence of enemy attack is discovered. The purpose of a counterpreparation is to disorganize command and control, break up formations, decrease the effectiveness of fire and maneuver elements, and impair the enemy's offensive spirit. A counterpreparation is normally planned in advance, held on call, and fired when the maneuver commander determines the attack is imminent.

A counterpreparation is normally phased

to permit successive attack on certain types of targets.

- The first phase attacks frontline positions, OP's, and fire support delivery and control elements.

- The second phase targets maneuver command posts, communications facilities, assembly areas, logistical complexes, and reserves.

Field artillery counterpreparation fires are planned by the DS FA battalion or higher echelon. For a discussion of counterpreparation planning procedures, see appendix I.

□ The Change of Command from the CFA to the MBA

As the covering force fights its way back toward the MBA, control of the covering forces will pass to the commanders of the forward committed brigades. This change will occur normally from 9 to 16 kilometers from the FEBA. The designation of the actual change of command point will be made known to the covering force elements and forward brigade commanders by a phase line or upon order of the division commander. Close liaison between forces in the CFA and MBA is essential to assist in a smooth change of command.

The MBA brigades will assume command of the covering force elements as they reach the change of command line in order to control the fight back and into the MBA. The MBA brigades coordinate the movement of covering force maneuver elements to their MBA defensive positions. By the time the majority of the covering forces have fought back to the change of command line, the division commander will probably have a firm idea as to when and where the main attack by the enemy will occur.

At the same time that command of the CFA battalion TF's passes to the MBA brigades, the responsibility for fire support also changes. MBA brigade FSE's pick up fire support coordination responsibility for the battalion task forces passing into their

sectors, and the division TAC FSE picks up from the covering force FSE the responsibility for the area beyond the brigade boundaries.

At brigade FSE, the brigade FSCoord must supervise and coordinate the change of fire support. He must insure that

- covering force battalion TF FSO's and their FIST's are in communication with the brigade's DS FA battalion. (The brigade's DS battalion, in forward supplementary positions, has been augmenting the fires of the covering force DS bn for several hours.)
- the brigade ALO/S3 air is in touch with the TF ALO's/S3 air,
- targeting information is passed from the TF's to the brigade, and
- the TF CFL's are consolidated into a brigade CFL and that it continues to move back with the fight.

While the brigade FSO must act aggressively to insure that the change of fire support control goes smoothly, many of his actions are based on plans determined ahead of time. Targeting, communication, positioning, and survey information must also be exchanged between the CFA DS FA battalions and the battalions DS to MBA brigades. Again, since all contingencies called for the CFA DS battalions to give up direct support requirements to MBA DS units when the change of command occurred, most of these details will have been previously coordinated.

At division, the TAC FSE has monitored the CFA fight throughout and must be ready to accept responsibility for fire support in the division sector.

The div arty TOC has also followed the battle and is ready to control the MBA field artillery. The CFA FA battalions are assigned missions and repositioned as discussed in "option 1" and "FA positioning" to fire into the main thrust area. Target acquisition assets are repositioned and reoriented on the main thrust sector and the division counterfire program takes on increased importance.

WHEN THE RESPONSIBILITY FOR FIRE SUPPORT PASSES FROM THE CFA TO THE MBA, FSCoord's AT ALL LEVELS MUST COORDINATE CLOSELY TO INSURE THE UNINTERRUPTED ABILITY TO MASS AND SHIFT FIRES IN THE CRITICAL ZONE.

The primary changes in CAS include:

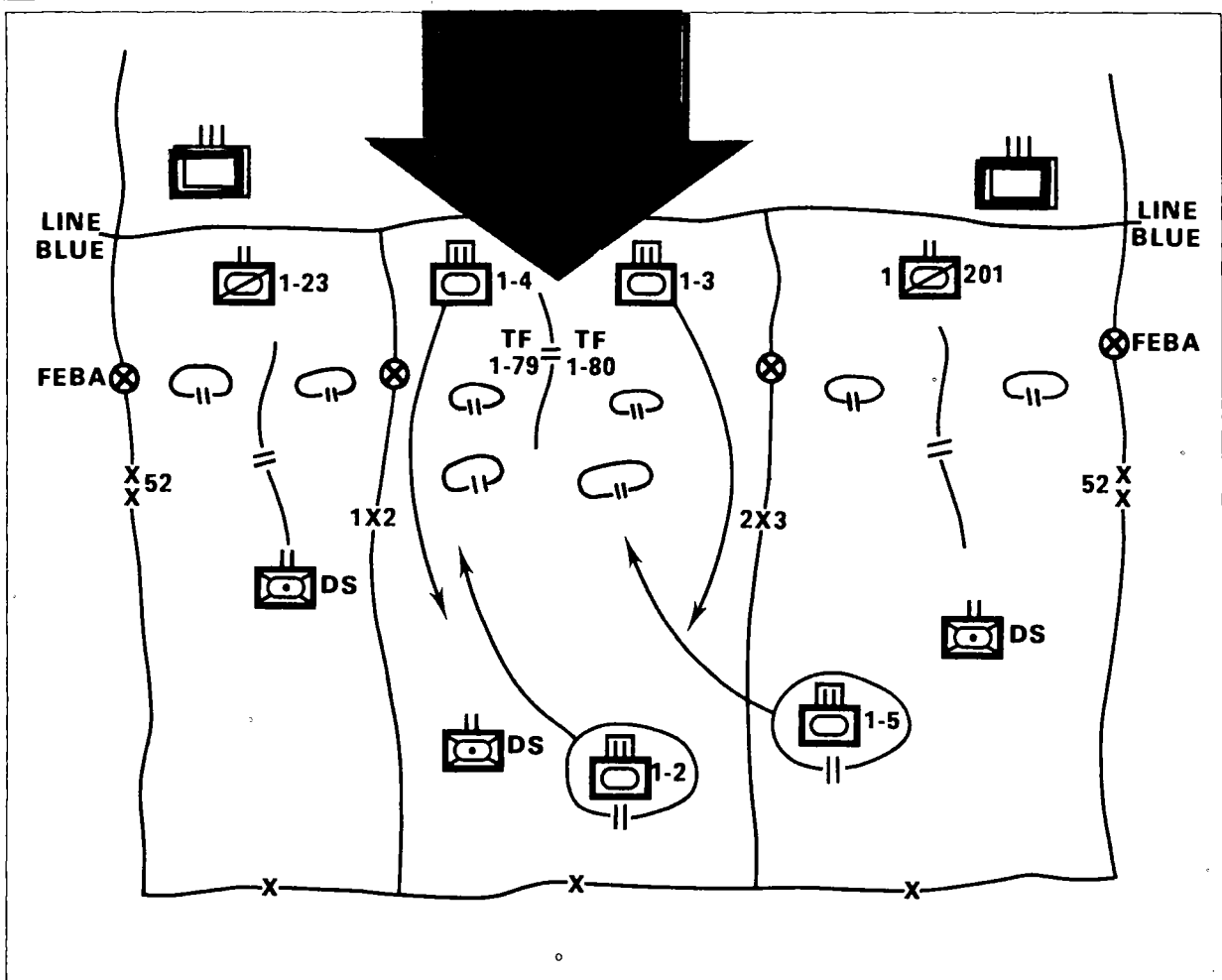
- CFA battalion TF requests for CAS are monitored and approved or disapproved at the brigade FSE's rather than at covering force HQ.
- Division TAC FSE rather than the CF FSE will be requesting CAS in the area beyond the brigade sectors.

5-10. How to Support the MBA Area of Concentration

□ General Situation

The covering force has forced the enemy to deploy and begin massing for their breakthrough attempt. The division commander determined the enemy's main

FIGURE 5-16. INITIAL REACTION TO THE CENTER MAIN THRUST.



thrust to be forward of the center, or 2d Brigade, sector. Intelligence confirms that the enemy is leading with two divisions, followed closely by two more divisions in the

second echelon. Based on this information, the commander begins to concentrate maneuver and fire support forces to meet the enemy breakthrough attempt (fig 5-16).

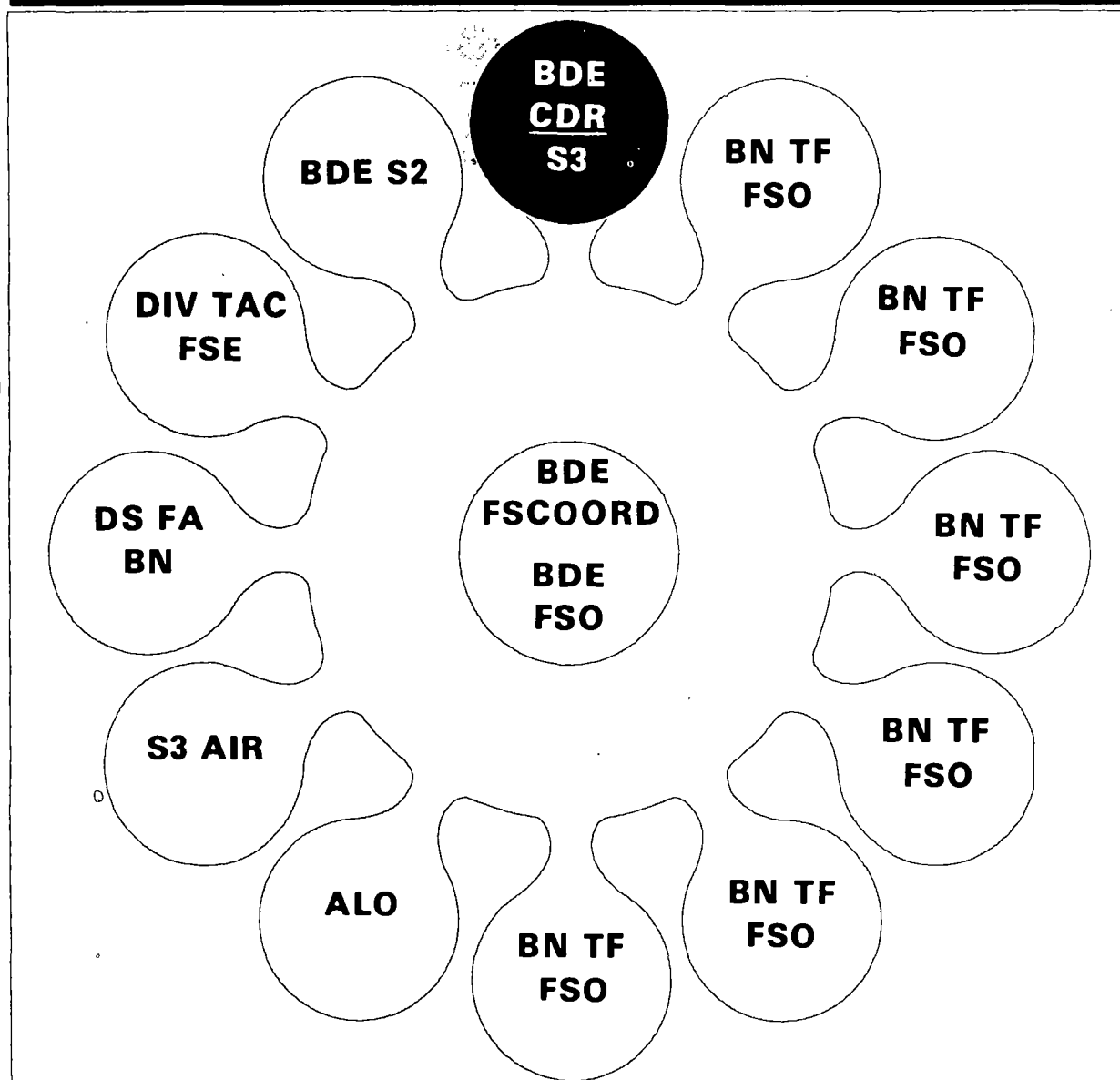
Initially the commander attaches TF 1-2 Armor and TF 1-5 Armor to the 2d Brigade. Covering force maneuver elements, nearing the forward edge of the MBA, are now under the control of the brigades in their respective sectors. The 2d Brigade is controlling TF's 1-3 Armor and 1-4 Armor to the front; the brigade commander will also use these task forces to

thicken forces in the critical sector.

□ FSCoord Activities

The FSCoord for the 2d Brigade is the commander of the DS FA battalion. He is assisted by the FSO at the brigade FSE. His contacts in the planning and coordination of fire support are shown in figure 5-17.

FIGURE 5-17. MAIN THRUST BRIGADE FSCoord's FS CONTACTS.



The FSCOORD of the brigade facing the main thrust has an extremely challenging job. He must coordinate the bulk of the division's fire support assets as they are employed in a brigade sector that contains the bulk of the division's maneuver forces. At times as many as five or six battalions may be in contact simultaneously.

The brigade FSCOORD must insure that

- each engaged battalion TF has access to immediately responsive fire support,
- fires are rapidly massed on appropriate targets within the sector,
- support of repositioning and reinforcing TF's takes place with minimum confusion,
- the change of FS control (at Line Blue) and support of the passage into the MBA go smoothly in the brigade sector,
- FA positions and movement are coordinated and timed so that they do not interfere with maneuver plans,
- appropriate FS coordinating measures are put into effect to allow rapid attack of enemy forces not in immediate contact with brigade units, and
- responsive communications and procedures are in effect for all available fire support means.

The following fire support assets are available to the brigade:

□ CAS

Priority on the 80 air sorties allocated to the division daily.

□ Field Artillery

1 - 155-mm SP battalion (1-41 FA) DS to 2d Brigade

1 - 155-mm SP battalion (2-301 FA) R 1-41 FA

1 - 8-in SP (2-303 FA) and one 155-mm SP (2-302 FA) GSR 1-41 FA

The brigade's habitual DS battalion (1-41 FA) was preparing for the MBA defense long before the CF fight began; 2-301 FA was DS to TF 1-3 during the covering force fight. When control of covering force elements passed to MBA units, 2-301 FA (along with 2-303 FA and 2-302 FA) was released from its

DS mission in the CFA and assumed its MBA mission.

□ Mortars

Each battalion has one mortar platoon.

Each mechanized company has a mortar section.

(The brigade FSO will not normally plan or control mortar fires; however, he must be aware of who has what mortar support when he is recommending priorities for other fire support means.)

The brigade commander provides the following guidance to the brigade FSCOORD:

"The main attack appears to be coming in 2d Brigade. It could involve up to four of their divisions before it's over. It looks now as if we'll be getting the maneuver battalions and fire support assets we'd planned for in plan "ZULU." You've got to insure that each thickening battalion gets rapidly linked up with your fire support system and that each battalion gets *responsive* fire support when it's engaged. We could well have four or five battalions engaged at one time so *insure* that we don't have any big communications bottlenecks. Let me know if that additional communications equipment isn't here within 30 minutes. We should be getting almost all of division's CAS sorties—so be looking for the right targets—and be sure that our FAC's are in the best places. We've got to get everything we can out of our fire support on this one."

□ Fire Support Tasks

At *brigade level* in the breakthrough sector there are these major fire support tasks:

- Employ massed fires on large enemy concentrations—here that could include six FA battalions, CAS, and mortars.
- Canalize, slow, and erode threat forces before they come within direct fire range of friendly units.
- Fire to support disengagement and repositioning of battalion TF's.

- Furnish SEAD fires to support brigade use of CAS and AH.
- Provide immediate counterfire and a link to the div arty counterfire system.

The 2d Brigade's DS battalion (1-41 FA) will have done all of the initial fire planning for the 2d Brigade fight from Line Blue back to the brigade rear boundary. 1-41 will continue to plan and control FA fires in the 2d Brigade zone. The addition of the reinforcing FA battalion, however, doubles the firing units immediately available to deliver fires for 2d Brigade. The GSR elements will be available in second priority.

As the fight nears the FEBA and more targets appear, the normal relationship between the DS and reinforcing battalions may be altered somewhat. The demand for close support fires may be so great that *quick fire channels* must be used to allow engaged units to call for fire directly to batteries of the reinforcing battalion. The DS battalion, however, must monitor these requests so that all available field artillery may be massed on appropriate targets throughout the brigade sector. Available GSR fires can be acquired through liaison representatives in the FDC of the DS battalion.

□ FA Positioning

The positioning of FA units in the main

thrust sector is one of the most critical fire support functions of the battle. The overriding consideration must be that firing units be able to range the area of concentration but that they not be forced to displace at times when their fires are most needed.

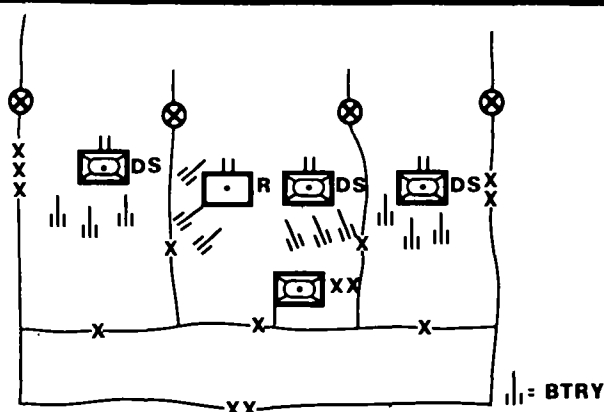
Division artillery will position all FA units except the DS and one reinforcing battalion. GSR elements will be positioned to fire into the 2d Brigade sector.

1-41 (2d Bde's DS FA bn) commander will position his batteries and those of his reinforcing battalion.

During the covering force fight, both units would have been positioned well forward near the center of the 2d Brigade sector.

As the threat intentions are verified and the MBA plans are being executed, the DS battalion commander will probably want to put his firing units farther back and toward the flanks. In this case he has chosen to keep his DS battalion on the side of the enemy thrust nearest the div arty TOC, and has positioned the reinforcing battalion on the other side. While the firing units are on the flanks, the two FA battalion CP's will have to stay closer to the center of the sector to insure adequate communications and adequate control by the DS battalion commander. See figure 5-18.

FIGURE 5-18. POSITIONING OF DS AND REINFORCING FA.



□ FA Coordination

A tremendous amount of FA coordination will be required to properly support the MBA brigade in the path of the enemy main thrust. Much of this coordination, however, can be done well in advance.

Most of the details between the DS battalion and its reinforcing unit, for example, must be worked out as a probable contingency before the covering force deploys.

Primary and alternate positions and movement routes will also be planned and coordinated well in advance.

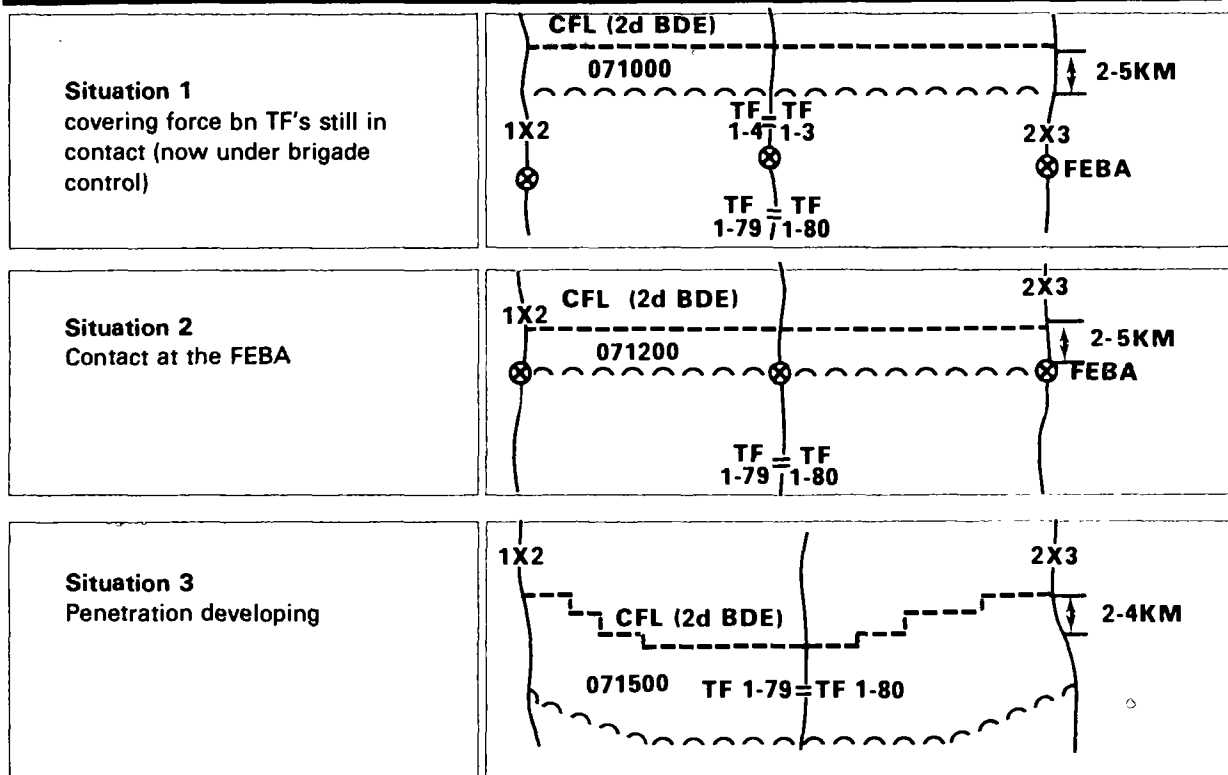
□ Fire Support Coordination Measures

After the enemy reaches the FEBA, attention will focus on the developing breakthrough. The 2d Brigade will be

concerned primarily with attacking enemy forces to their immediate front while division will attempt to prevent more threat forces from moving toward the breakthrough zone. At no time or place on the battlefield is the proper use of fire support coordinating measures more important.

The brigade CFL should be kept as close as possible to the frontline units so that FA under division control can attack targets beyond the CFL without coordinating with 2d Brigade. The brigade FSCOORD should recommend CFL changes as the penetration develops. The division FSCOORD recommends that the corps FSCL be moved rearward in the same manner so that CAS available at division or corps can be employed without unnecessary coordination. The CFL during the phases of the 2d Brigade battle could well be as shown in figure 5-19.

FIGURE 5-19. MBA COORDINATING MEASURES.

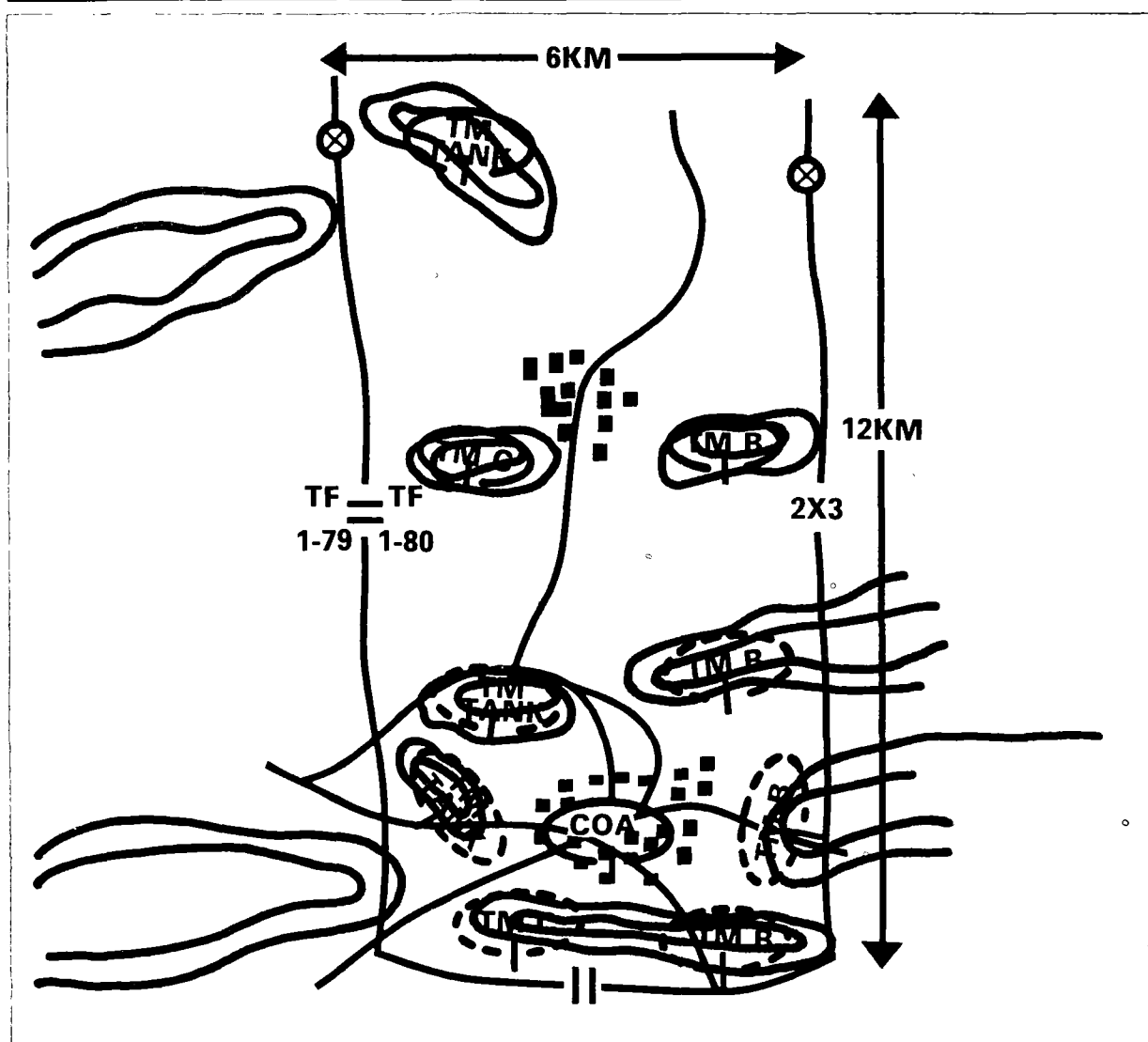


5-11. How to Support a Battalion Task Force in the MBA

Returning to our example, TF 1-80 Mech and TF 1-79 Mech are at the FEBA preparing to defend in the 2d Brigade sector as shown in figure 5-20. TF 1-80, on the right, receives the mission to "defend in sector." The

commander defends as far forward as possible. His plan capitalizes on every fold in the terrain to get long-range fields of fire and to permit surprise flanking direct fire whenever possible. The commander and FSO were especially alert to areas where they could apply *massed fires* to slow or stop the enemy. These massed fires will be essential to provide adequate target servicing time for direct fire weapons in each engagement.

FIGURE 5-20. TF 1-80 MECH AND TF 1-79 MECH AT THE FEBA.



**AS THE COMMANDER ANALYZES
THE MISSION AND VISUALIZES THE
BATTLE, THE FSO CONTINUALLY:**

- **ASSESSES THE CAPABILITIES
OF THE UNIT'S INDIRECT FIRE
SUPPORT MEANS,**
- **ADVISES THE COMMANDER ON
THE INDIRECT FIRE "SUPPORTABILITY"
OF A PARTICULAR COURSE
OF ACTION, AND**
- **ASSISTS THE COMMANDER IN
ARRIVING AT THE COURSE OF ACTION
THAT MAXIMIZES THE CAPABILITIES
OF BOTH MANEUVER AND
FIRE SUPPORT ASSETS.**

For this mission the task force commander planned with the following major assets available:

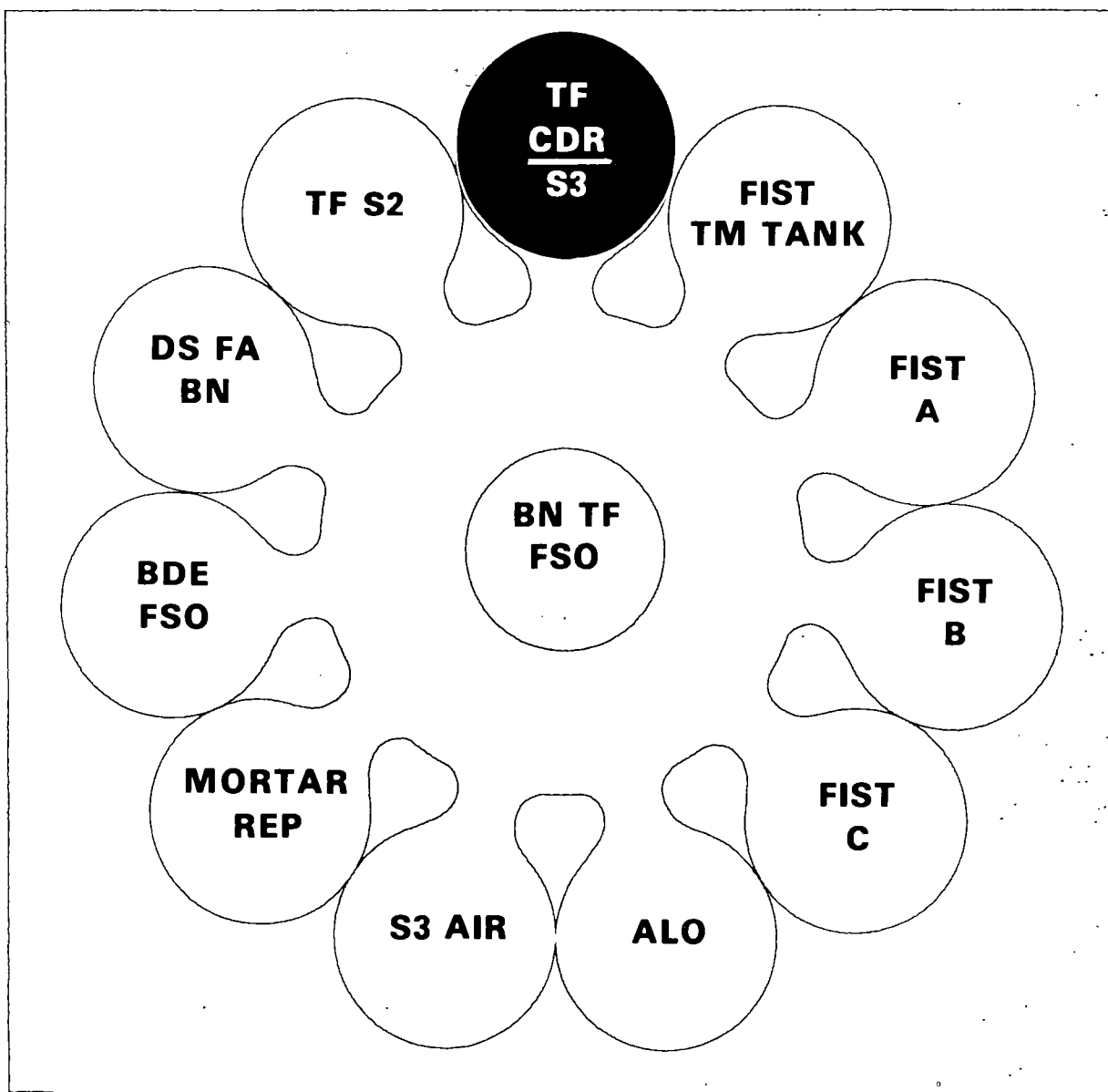
- **Mech-heavy task force**
 - 1 tank company (Tm Tank).
 - 3 mechanized companies, (Co A, and Tms B and C, with two TOW's each).
 - Cbt Spt Co (with 12 TOW's).
- **Fire support**
 - 3 company mortar sections (1 ea mech co).
 - 1 battalion mortar platoon (cbt spt co).
 - 1 FA battalion (DS) to *brigade*.
 - Additional FA available if the main thrust comes in 2d Brigade sector.
 - Close air support from brigade sorties as requested.
- **Engineers**
 - 1 Platoon (DS).

Based on his mission analysis and visualization of the battle with the S3 and FSO, the task force commander tailored his teams to the terrain and identified battle positions in depth. Team Tank would engage the enemy initially followed by Teams B and C astride the road.

Because it was the hub of a major highway network and therefore considered critical, the brigade commander decided to have TF 1-80 establish a strongpoint in the built-up area in the rear of his sector. Co A and the engineer platoon will prepare and occupy the strongpoint.

The TF commander determined critical task force targets and disseminated them to subordinate elements and fire support units. In addition, he developed plans to assist the rearward passage of covering force elements in his sector. He prepared to receive attachment of some of these elements if necessary.

As the FSCOORD for the task force, the battalion FSO assisted the commander in determining critical fire support tasks and how they complement the maneuver plan. He recommended the best way to accomplish these tasks and provided guidance and assistance to FIST chiefs to help them fit their fire support planning into the overall

FIGURE 5-21. TASK FORCE FSO CONTACTS IN THE MBA.

task force battle plan. The FSO's contacts are shown in figure 5-21.

Since he has been in the defensive sector for a time before the fight actually arrives there, the FSO has had the opportunity to do several more things:

- Locate targets precisely and get survey information from the DS FA battalion about

the whole task force sector.

- Conduct a detailed target area reconnaissance.
- Select specific fire support means to shoot specific targets.
- Refine in detail targets received from company teams.
- Target the sector in depth.

- Register weapons within the sector.
- "Shoot in" the most critical targets.

□ **Fire Support Tasks in an MBA Battalion Task Force**

A battalion TF's sector of defense is usually more narrow and more shallow in the MBA than in the CFA. Like the CFA fight, most fires support company teams, but in the MBA *complete* integration and close coordination of direct and indirect fires is even more critical. More enemy must be destroyed faster to win the decisive battle here. To insure that fires are continuously placed on advancing enemy forces, the FSO must carefully plan and coordinate control of fires as the covering force elements approach and pass through his MBA battalion.

Specific fire support tasks to be accomplished include the following:

- *Massed* fires to slow the enemy advance and canalize his forces.
- Fires against known or suspect enemy elements capable of interfering with the rearward passage of covering force elements. HE or obscuring smoke fires are both effective.
- Fires to obscure or suppress suspect enemy overwatch positions.
- Fires behind enemy first echelon forces to isolate them and facilitate direct fire destruction.
- Fires to cover obstacles.
- Fires to separate infantry from armor.
- Smoke and suppressive HE fires to cover disengagement and repositioning of maneuver units.
- Illuminating fires to facilitate direct fire at night.
- Fires to support strongpoints (including final protective fires).

Fire support assets initially available at *task force level* were:

- the battalion mortar platoon,
- FA battalion DS to the brigade, and
- close air support from brigade sorties as requested.

In his initial planning, the FSO examined

tasks and assigned targets for fire support means available to accomplish them.

The battalion mortar fires were planned to provide close support of engaged companies. Their fires were targeted to suppress enemy overwatch positions, separate enemy infantry from tanks, and provide protective fires to battle positions. The platoon was placed in GS of the battalion with priority of fires to Team Tank in the battalion's forwardmost battle position. 81-mm fires from Co A and Tms B and C mortars are planned and controlled by their respective team FIST chiefs. All mortars are positioned in hardened, defilade positions. Alternate positions have been reconnoitered and prepared. Mortars move by echelon as the battle develops.

The DS FA battalion fires were planned primarily to permit rapid massing on enemy formations to slow and canalize them, and suppress their direct fires and those of overwatching elements. Deeper targets are planned to isolate lead echelons during direct fire engagements as well as cover the rearward passage of covering force elements.

Massed fire targets especially critical to the battle plan were planned by the TF FSO and then locations and target numbers were disseminated. FIST chiefs further targeted their areas, adding only those targets critical to the company plan, and passed these to the FSO. The FSO consolidated and passed them to the DS FA battalion FDC and the brigade FSO. Priority of FA fires was given initially to Tm Tank; priority will shift to Tm C after Team Tank relocates to its next battle position. To insure that they are clear and available for fire missions, FA "fire" net frequencies should not be used for fire planning. Fire planning information should be sent (encoded) on the "command fire" net or carried by messenger. The TF FSO also passed the basic maneuver plan to the DS FA battalion so the FA could position to avoid interference with maneuvering units.

Close air support sorties available for planning were retained at brigade headquarters. However, the FSO, S3 air, and

ALO determined where the most likely choke points existed to capitalize on the use of CAS and noted these for future reference. Procedures for requesting and controlling CAS were discussed and instructions were passed to FIST chiefs. Mortars and FA were notified to be prepared to mark identified CAS targets with smoke when requested.

□ Coordination

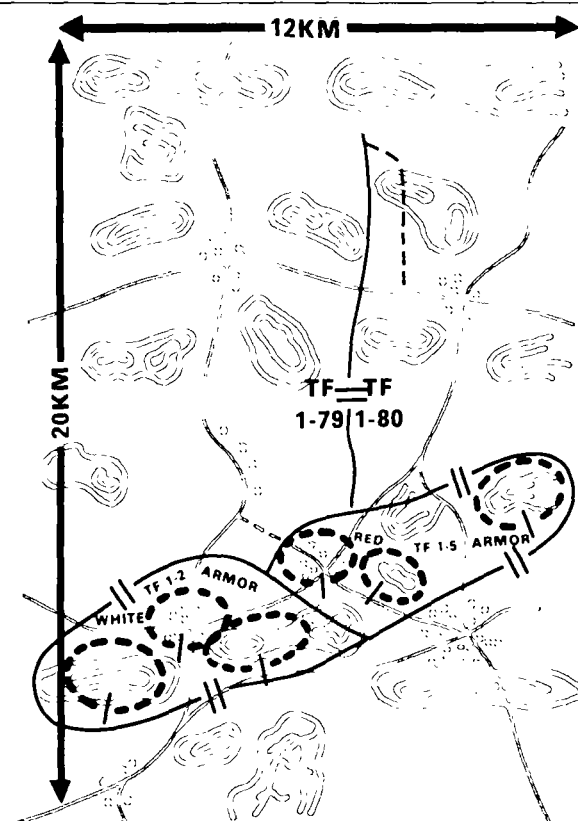
While the brigade will be establishing the CFL, the TF FSO is prepared to recommend where it should be with respect to TF 1-80. The FSO will also be alert to the need for a restricted fire area (RFA), if necessary, in the event one of the task force elements is cut off and isolated from the rest of the task force. Additional coordination by the FSO includes

checking with the adjacent task force FSO's to effect the best application of fire support along the "edges" of the task force sector.

□ A Changing Situation

In our example, since the enemy's main thrust is now known to be coming in the 2d Brigade sector, the FEBA task force FSO's have some new considerations. There is a modified battle plan to coordinate. Recall that TF 1-79 is on the left and TF 1-80 is on the right of the brigade sector. The 2d Brigade commander has received attachment of TF 1-2 Armor and TF 1-5 Armor. He directs TF 1-2 to occupy Battle Area WHITE and TF 1-5 to occupy Battle Area RED (fig 5-22). He notifies TF 1-79 and TF 1-80 of the creation of the battle areas.

FIGURE 5-22. BATTLE AREAS WHITE AND RED.



With the main enemy thrust coming in the 2d Brigade sector additional fire support assets will also be available to elements in the sector.

The Task Force 1-80 commander, S3, and FSO have gathered to analyze the situation:

TF cdr: We're going to have to get the last ounce out of every engagement. Massed fires are a must to slow and disrupt the enemy's advance. How many battalions can we mass, based on the new FA organization?"

FSO: "Sir, we can mass up to four battalions now and with two others in position by the time the enemy gets to the FEBA. We should request general release for scatterable mines in our sector, then we can employ them responsively when necessary. We'll plan some more massed fires closer to battle positions to support stronger resistance and later departure from one position to another."

TF cdr: "Good. Be sure we coordinate very closely with TF 1-79 and 3d Brigade to insure our plan and theirs complement each other. We must not allow any major elements to get between us and adjacent forces. We'll eventually pass back through TF 1-5 in Battle Area RED and occupy positions around the strongpoint Co A is preparing in that village. S3, make sure TF 1-5 knows that Co A is there and how we expect to pass through TF 1-5 to occupy positions around that strongpoint. FSO, get with the TF 1-5 FSO to coordinate fires for our passage through them."

In the meantime, TF 1-5 Armor (div reserve) has been notified to move to 2d Brigade and into Battle Area RED.

☐ Fire Support Coordination for a Relocating Task Force

As TF 1-5 Armor from the division reserve moves to 2d Brigade in the area of concentration to Battle Area RED, the commander, S3, and FSO have several critical tasks to accomplish.

- ☐ Analyze the mission to determine
 - tentative battle positions for company teams,

- anticipated flow of the battle from initial to subsequent positions, and

- fire support tasks and resources available.
- ☐ Establish communications and coordination with the gaining headquarters and appropriate subordinate or supporting elements.

- ☐ Develop tentative maneuver and fire support plans and disseminate these en route to the new area.

Of particular concern to the FSO are the critical targets that form the basis for fire support in the overall battle plan. The commander and FSO develop these initially through map inspection, available intelligence, and any guidance available at the time from the gaining brigade commander. These plans will be adjusted and refined when the commander arrives in his new battle area.

The FSO checks with the DS FA battalion to get the block of target numbers assigned to the task force. The DS battalion will also provide any targets that have already been planned for the task force's new battle area. In addition the FSO confirms the frequencies and call signs in use in the new area and passes these to elements within the task force.

When the task force commander and FSO arrive in the new brigade area they will, if possible, talk with the brigade commander and brigade FSO to accomplish the following:

- ☐ Receive guidance and get the brigade commander concept of their new mission and the overall brigade operation.

- ☐ Complete the linkup of task force, brigade, and DS battalion FS support agencies (call signs, frequencies, SOP items).

- ☐ Adjust, as required, their preliminary plans made en route to the new battle area.

The assignment of a battle area with its boundary allows the occupying commander to accomplish the following:

- ☐ Shift or move his company teams freely within his battle area as he sees fit (e.g., the brigade commander in this case did *not*

restrict him by requiring him to hold a battle position).

□ Call artillery or airstrikes into his own area but *not* into adjacent occupied battle areas without first coordinating. He may freely call in artillery forward of his boundary when that terrain has been vacated by friendly units. In all cases, the brigade commander has required that he approve all requests to call in scatterable mines and emplace conventional mines.

When the TF 1-5 arrives in Battle Area RED, the commander refines his initial plan and coordinates with TF 1-80. In the fire support area, the two TF TSO's have five major concerns. They must

- confirm targets already planned by TF 1-80 in Battle Area RED, and in the sector forward of the battle area;
- arrange for the shift of fire support coordination and control as TF 1-80 passes through TF 1-5;
- determine the sequence of fires to support the passage of TF 1-80;
- fire direct fire weapons against clearly identifiable enemy targets *without* coordination; and
- be prepared to move or counterattack into the battle area of another unit on orders from the brigade commander.

□ **Development of the Battle**

As the battle nears the FEBA, the covering force task forces are about to pass through the FEBA forces who are deployed as shown in figure 5-23. The enemy is pushing the covering forces across a 12-km front with eight reinforced tank and motorized rifle battalions in the first echelon. These first echelon units are closely followed by four reinforced battalions in their respective regiments' second echelon.

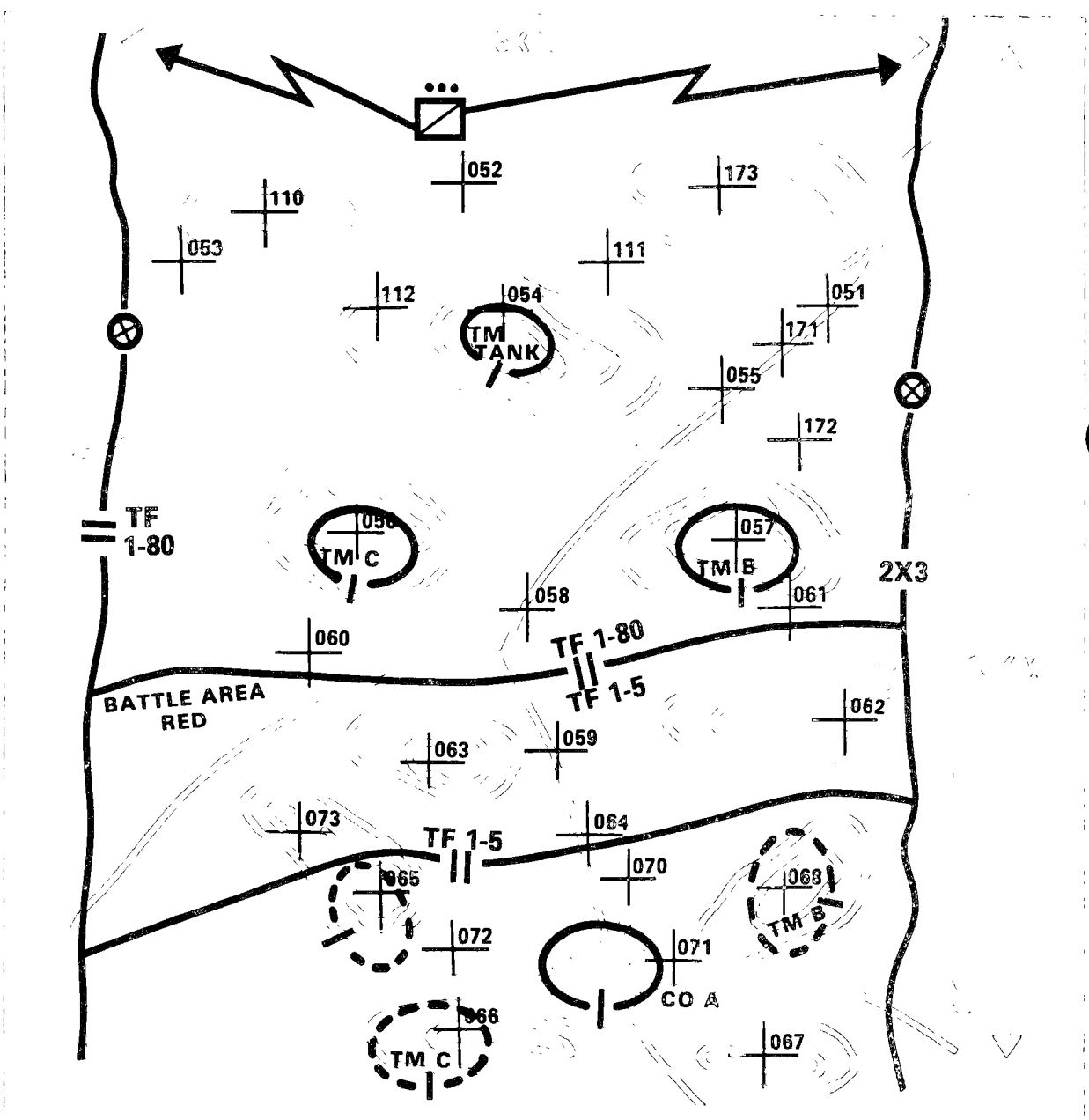
**IN THE MBA, COMPLETE INTEGRATION
AND COORDINATION OF DIRECT AND
INDIRECT FIRES IS CRITICAL**

TF 1-80 has placed scouts reinforced with HAW's forward of these FEBA positions to assist the passage of covering force elements. Scouts have contacted main elements of the covering force and are preparing to call for fire coordinated with the last engagement by

the covering force elements.

As the covering force elements disengage using fire and maneuver, forward covering force teams integrate massed fires on approaching enemy columns. They increase the volume of direct and indirect fires to cover

FIGURE 5-23. FEBA FORCES DEPLOYED.



their withdrawal. Scouts are aware of these and other planned targets in the area and continue the application of indirect fire as the last covering force elements pass the scouts' position.

As the enemy approaches, the scouts withdraw through the FEBA forces under the overwatching fires of Tms Tank and B. The TF 1-80 FSO (with Tm Tank) insures that all targets are covered and he controls some fires from the TF FSE, if necessary, to protect the scouts' withdrawal. Scouts provide specific information on the location of advancing enemy elements. The FSO carefully monitors this situation to determine what modifications, if any, are required in fire support priorities or timing for the initial engagement in the MBA.

When the enemy appears on and around the small ridge to the front, Team Tank calls for long-range indirect fires to *slow* the enemy, further *button up* armored vehicles, and *interrupt* the *momentum* of his attack. These fires assume critical importance because Tm Tank needs *maximum time to service* as many *targets* as possible from this first battle position. (Since the brigade DS FA battalion has repositioned to cover TF 1-80 primarily, and the reinforcing battalion is covering TF 1-79, TF 1-80 has immediate response from the whole DS battalion to increase responsiveness and volume of fires.) Fire support covers obstacles to keep units from breaching them and prevent effective enemy overwatch.

Team Tank initiates direct fire against slowed enemy tanks and BMP's against a backdrop of massed indirect fires to destroy trailing enemy elements. Team B begins calling long-range indirect fire on elements approaching their area.

As the battle progresses, Team Tank begins receiving heavy artillery and mortar fire that seriously impairs its direct fire capability. The Team Tank FIST chief requests immediate counterfire through the DS FA battalion and to the division artillery TOC who responds immediately with a

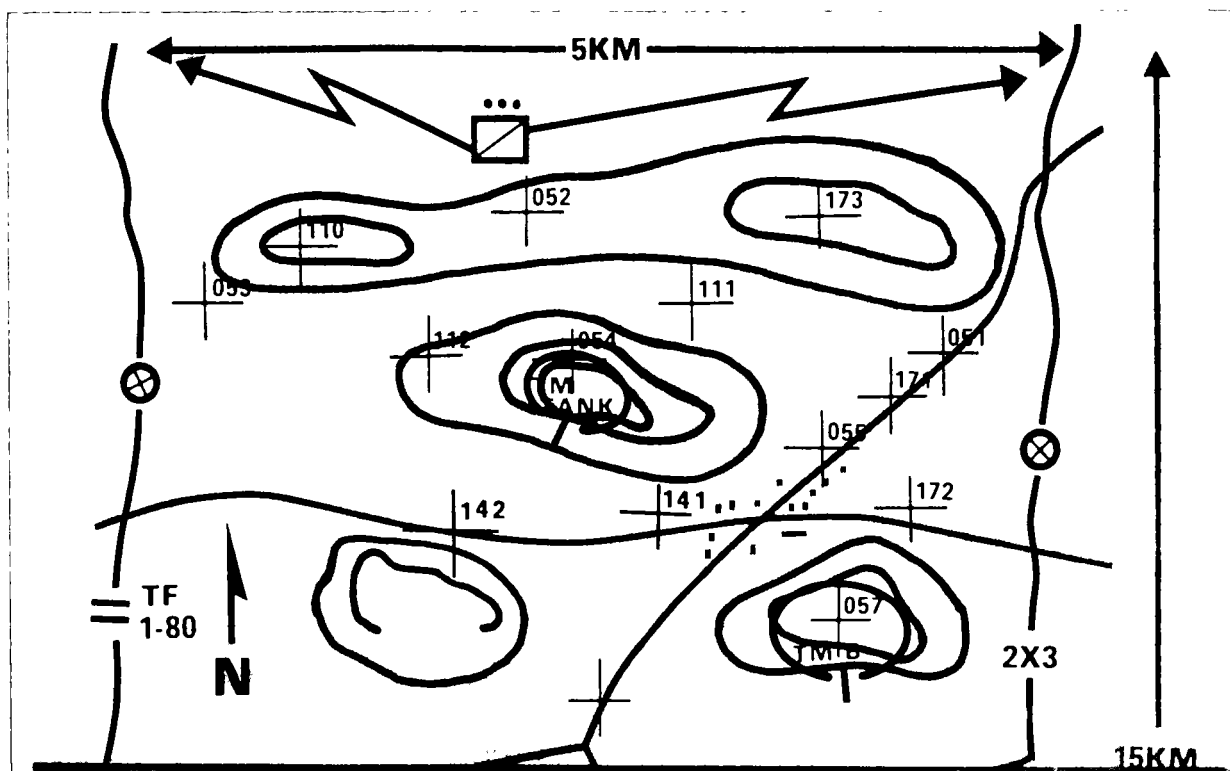
LONG-RANGE INDIRECT FIRES TO SLOW THE ENEMY, BUTTON UP ARMORED VEHICLES, INTERRUPT THE MOMENTUM OF ATTACK, AND DECREASE THE EFFECTIVENESS OF ENEMY INDIRECT FIRES ARE ESSENTIAL.

THEY GIVE THE MANEUVER UNIT THE TIME NEEDED TO BRING UNIMPAIRED DIRECT FIRE UPON AS MANY TARGETS AS POSSIBLE BEFORE DISPLACING TO ANOTHER BATTLE POSITION.

counterfire program oriented on the direction provided by the FO. Team Tank completes destruction of initial enemy elements and

repositions in his battle position to engage the next unit (fig 5-24).

FIGURE 5-24. TEAM TANK, B AREA.



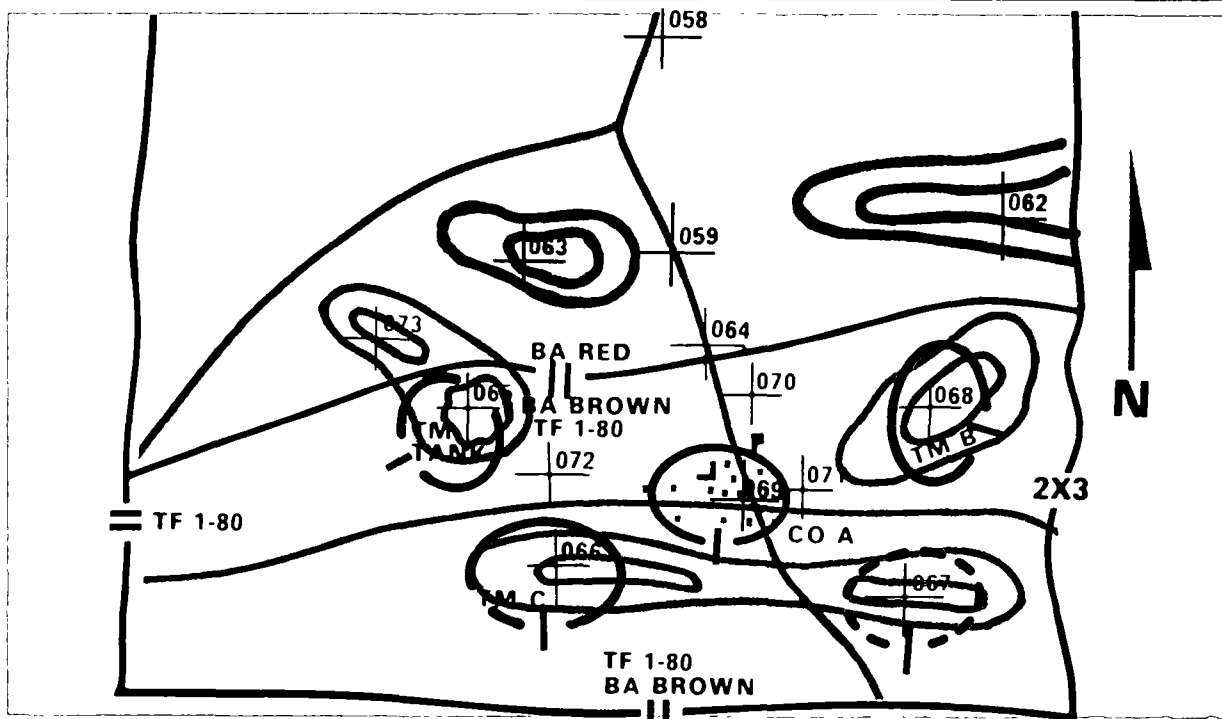
During the Team Tank engagement Team B began engaging enemy elements in the right portion of the sector. To further slow the momentum of the attack, the TF commander requests and receives approval to employ scatterable mines. The FSO calls these missions for the task force after determining the locations needing coverage from team FIST chiefs. The mines further slow the enemy and permit the final destruction of elements in the first echelon.

Teams Tank and B heavily damage the enemy's next echelon, but are unable to retain their positions. They prepare to move to the better positions to the rear of Battle Area RED. Team B overwatches the initial maneuver of Team Tank away from

the enemy, as the TF FSO calls for a mixture of smoke and HE fires to assist Team Tank repositioning. He prepares to do the same for Team B as they disengage and move to their next battle position.

When TF 1-80 can no longer hold its positions, it passes through Battle Area RED overwatched by TF 1-5, and moves to planned positions around the strongpoint in what has been designated Battle Area BROWN. Detailed coordination between the TF 1-80 and 1-5 FSO's provides for continuous control and coordination of fires as the passage takes place.

TF 1-80 occupies this battle area, including the strongpoint prepared by Company A as shown in figure 5-25.

FIGURE 5-25. BATTLE AREA BROWN.

Since the TF 1-80 battle plan concentrates on destroying enemy forces by pivoting around the strongpoint, fire support considerations for the strongpoint take on special importance. Fire support for a strongpoint must be a completely coordinated orchestration of direct and indirect fires to protect and exploit the use of the strongpoint.

The village strongpoint was part of TF 1-80's *original* (prethickening) defensive plan; therefore, this is not a *new* situation for the FSO. He must, however, modify his original plan to allow for support of TF 1-5 as they withdraw from Battle Area RED and move to the rear.

Fires planned to support Company A's village strongpoint must be coordinated with Team Tank, Team B, and Team C. These fires include the following:

- Mortar and FA FPF's planned around

the perimeter and "shot in" by Company A FIST.

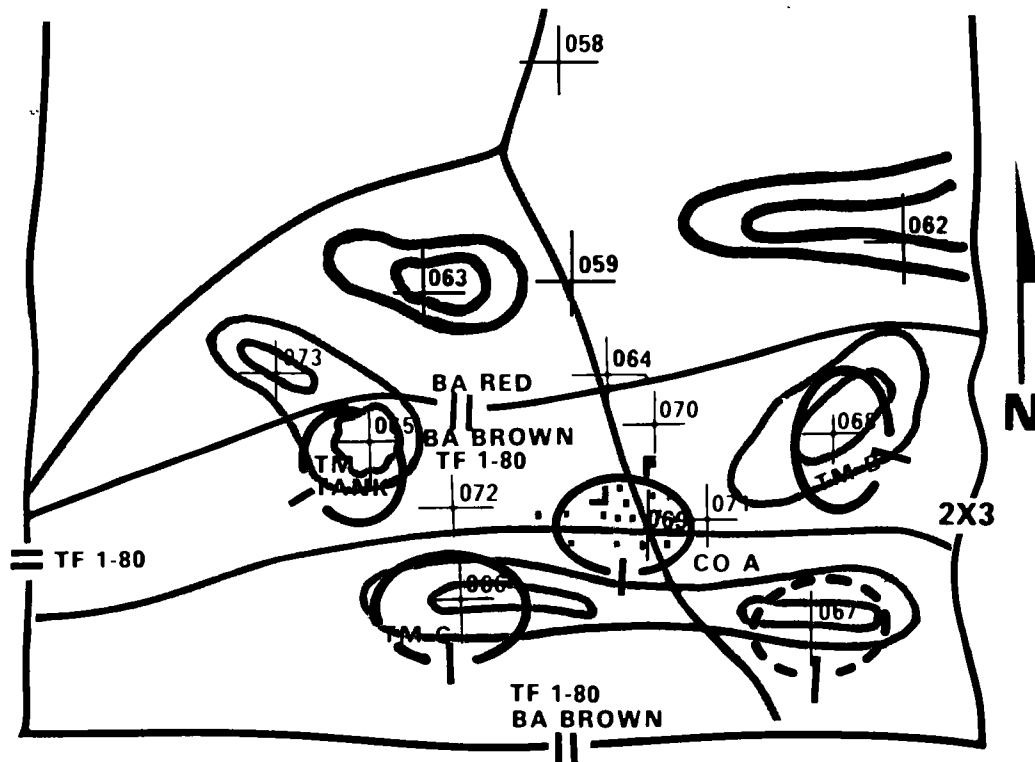
- Scatterable mines and battalion mass missions planned in the "gap" between Team Tank's position and the village and between the village and Team B's position (Targets 071 and 072).
- Fires planned to suppress and obscure enemy overwatch positions near Targets 062 and 063.
- Fires along the road—Targets 058, 059, and 064. Planned for FASCAM and DP ICM.
- Fires on and in front of Team Tank, Company A, and Team B positions.

As TF 1-5 vacates Battle Area RED and withdraws from their ridgeline positions, they pass into BROWN using previously coordinated routes. At this point, TF 1-80 picks up responsibility for the enemy and the northern portion of the battle area boundary is erased. TF 1-5 FSO had called for suppressive fires on Targets 062 and 063 as

the TF withdrew. This fire is now continued and controlled by TF 1-80. As soon as TF 1-5 moves through TF 1-80, the TF 1-80 FSO has

scatterable mines delivered to close passage lanes in the gaps near Targets 071 and 072. (See figure 5-26.)

FIGURE 5-26. BATTLE AREA BROWN.



Some 25 enemy tanks and BMP's come into sight just beyond Target 059. The FSO (located with the TF commander at Team Tank's battle position) personally times their rate and delivers FASCAM and DPICM on them in a strip 300 meters north and south of Target 064. Five vehicles are destroyed. The column deploys, attempting to bypass the strongpoint.

Here the strongpoint fires are sprung using

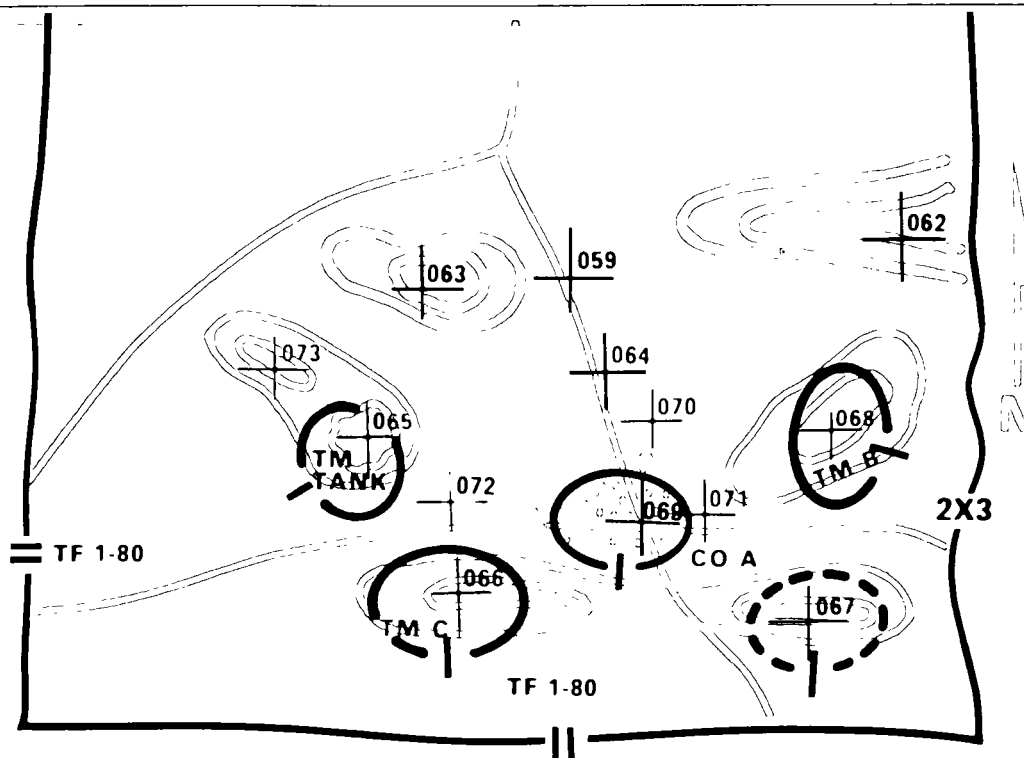
the direct fires of all four companies. FA continues to fire on Target 064 and suppression of overwatch positions at Targets 062 and 063. Mortars shift to—but do not fire until requested—protective fires in front of company positions.

Twelve of the armored vehicles are destroyed. The remainder withdraw through the FA blocking fires to a covered position

behind the hill near Target 062. One additional vehicle is lost to scatterable mines en route.

The 1-80 TF commander then requests

FIGURE 5-27. BATTLE AREA BROWN.

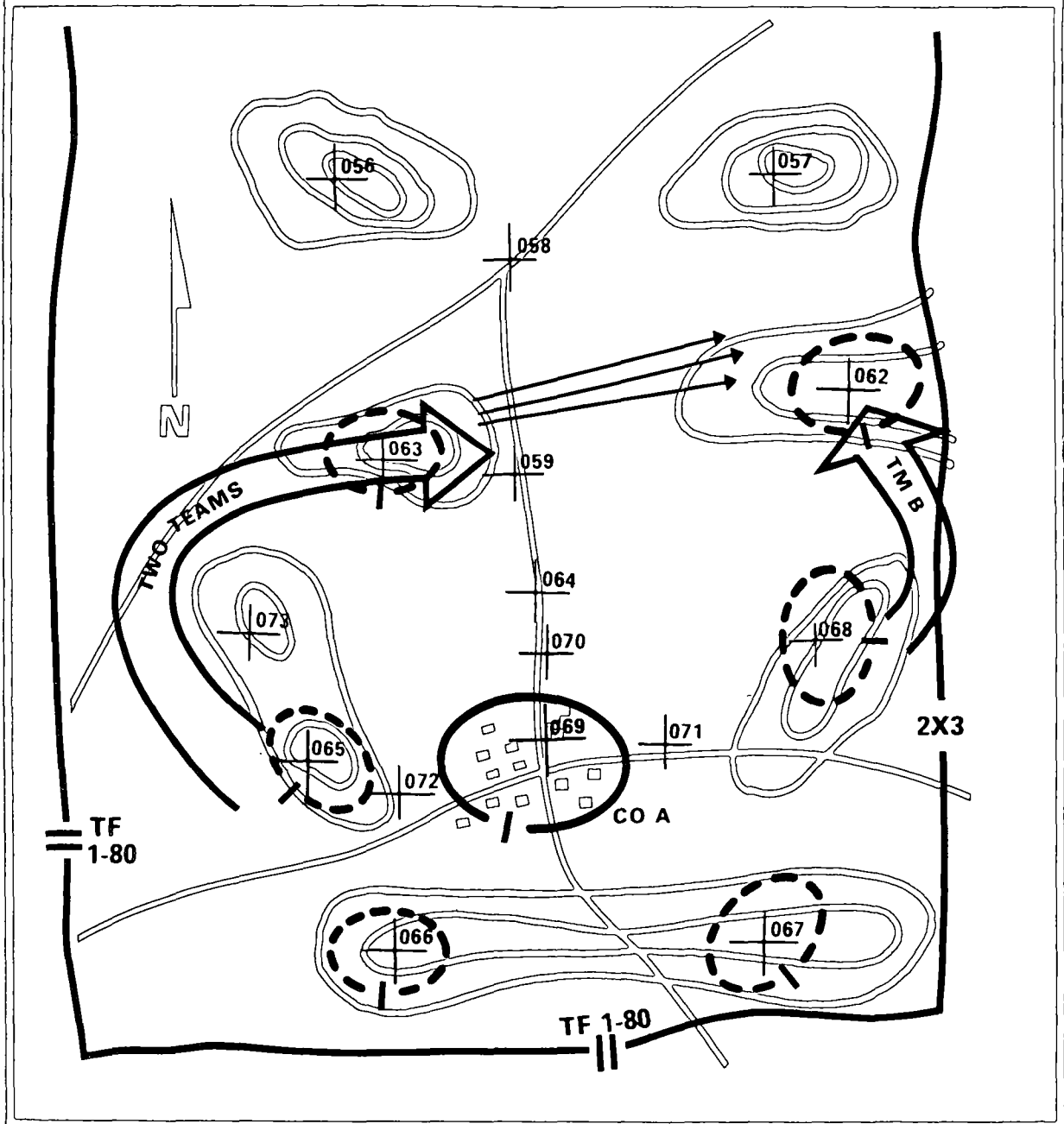


permission to counterattack to destroy the remaining enemy and regain battle positions at Targets 062 and 063. He is granted permission and quickly decides to move north behind the ridge from Team Tank's position and up on to the hill near Target 063. From there he will attack by fire the elements behind the hill near Target 062. (See figure 5-27.)

The FSO schedules suppressive fires on Targets 063 and 062. As Team Tank and Team C move up on the hill near Target 063, all fires are shifted on and behind Target 062. The counterattacking force then takes the

enemy under direct fire and they withdraw to the north. At this point, Team B moves from its position to retake the battle position near Target 062 and add their fires on the withdrawing enemy. (See figure 5-28.)

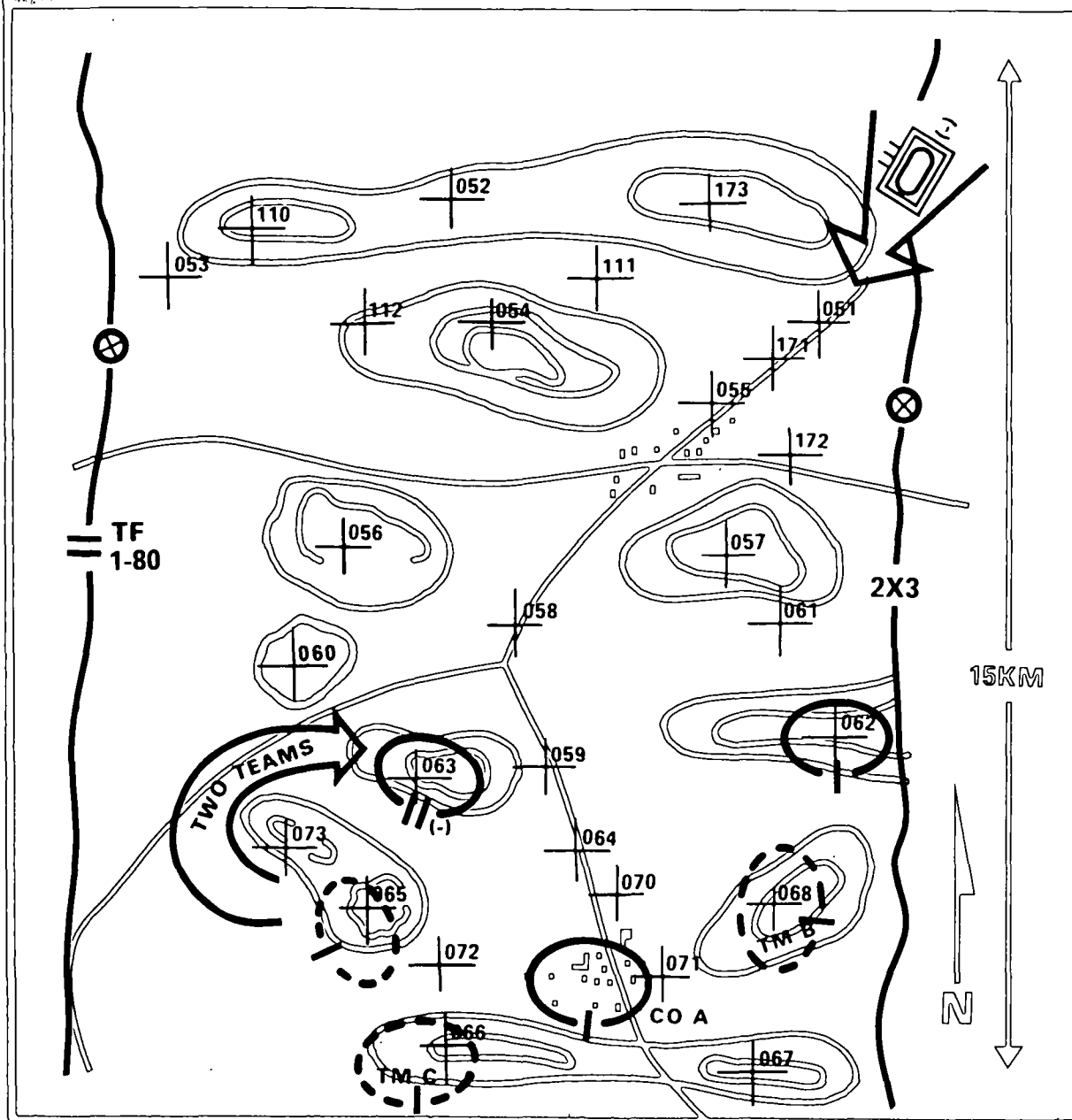
FIGURE 5-28. TF 1-80 COUNTERATTACK.



The FSO and FIST chief update and refine their fire support plans to insure they are prepared to support the defense of the retaken battle positions. The TF commander receives information that division all-source

intelligence center has discovered elements of an enemy second echelon tank regiment in the northeast portion of the 2d Brigade sector. The unit is moving southwest at about 30 km/hr (fig 5-29).

FIGURE 5-29. TANK REGIMENT APPROACHING TF 1-80.

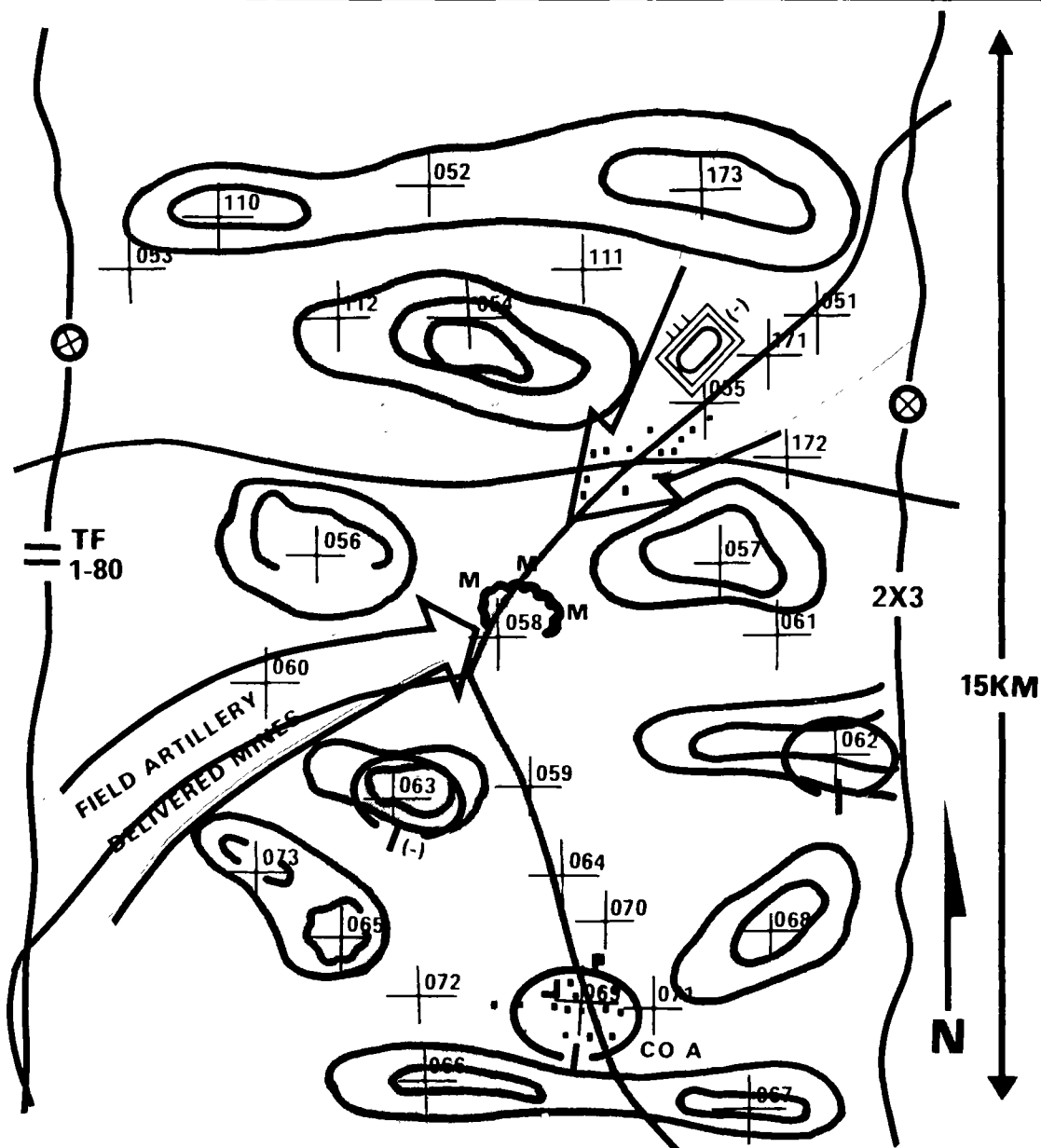


Brigade has requested an immediate airstrike on the target and has been notified that two flights of A-7's (four aircraft) loaded with Rockeye and Maverick missiles have been diverted from another mission. They will arrive in the target area in 10 minutes. Due to the enemy air defense capability, the

AFAC will remain 20 km to the south. The ground FAC (GFAC) with TF 1-80 has been directed to control the strike. The TF ALO and FSO agree that the road section between Target 058 and the village to the north will be the best place for the strike.

The FSO calls for and receives four

FIGURE 5-30. TANK REGIMENT APPROACHES SCATTERABLE MINES.



battalion volleys of antitank and antipersonnel scatterable mines to slow the tanks in the strike zone. He also arranges to have Target 058 marked with two WP rounds to be fired at his command, and to have a 155 battery fire zone and sweep (HE-VT) during the strike to keep the tanks "buttoned up" and to suppress SA-7, SA-9, and ZSU-23/4 air defense systems in the target area.

Within 10 minutes, 40 vehicles (T62's and BRDM's) emerge from the village, moving rapidly south toward Target 058. As the lead vehicles hit the FASCAM minefield, two are immobilized by antitank mines; the remainder are forced by the antipersonnel mines to button up. The FSO begins the battery HE-VT zone and sweep of the target area at this time. (See fig 5-30.)



The GFAC contacts the AFAC and is told to contact the flight leaders to insure understanding of the attack information including target location, marking technique, maximum ordinate, and GT line for suppressive fires, initial point (IP), and popup point (PUP).

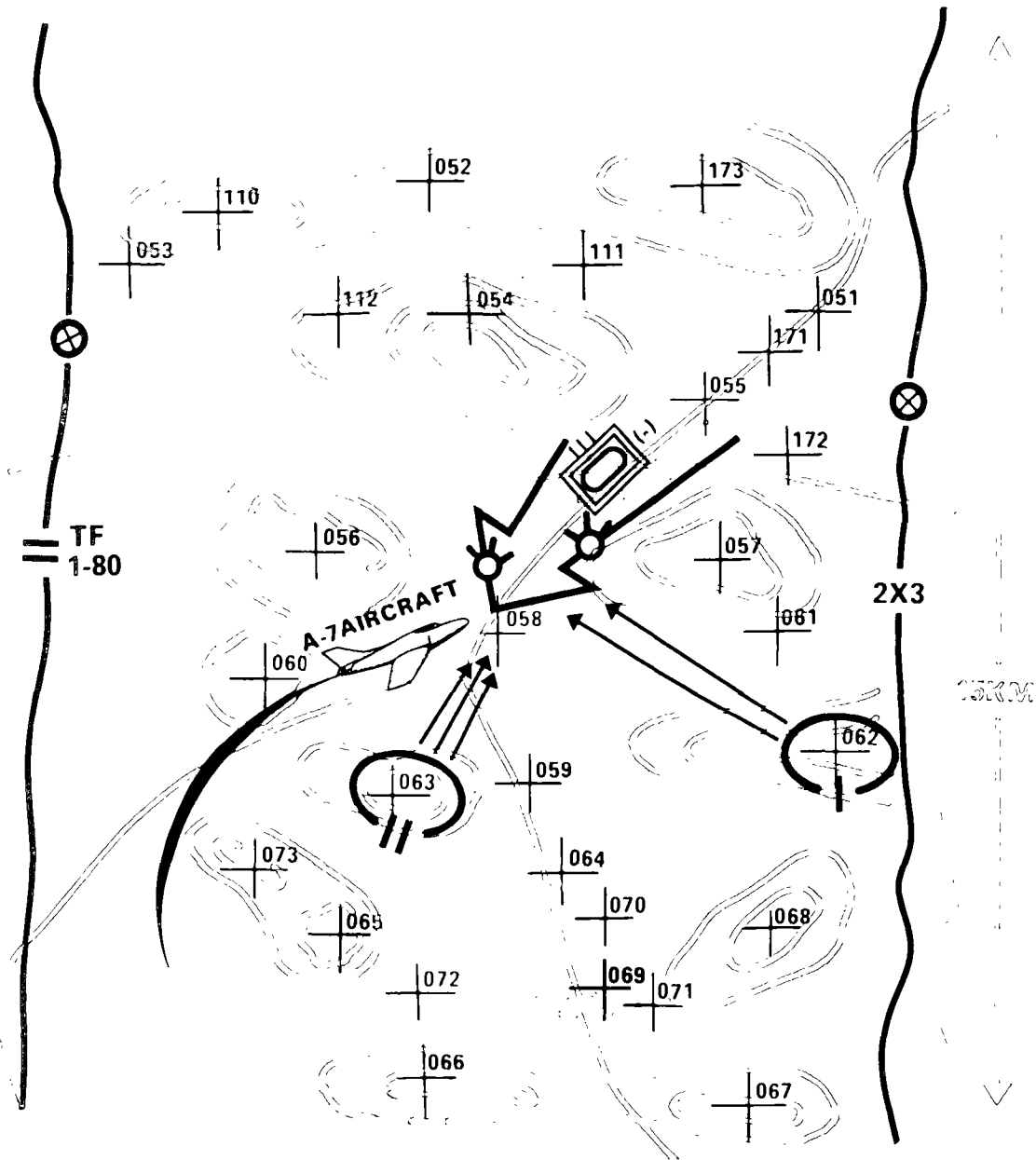
On the GFAC's signal, the FSO has Target 058 marked with two WP rounds, and continues the battery HE-VT zone and sweep throughout the airstrike. The four A-7's arrive, acknowledge the marking rounds, and begin attacking the vehicles at the front and back of the column. The A-7's make multiple passes, employing the Rockeye munitions against any clusters of tanks and surgically destroying individual tanks with the Mavericks (fig 5-31).

The flight of four A-7's accounts for 26

vehicles in less than 10 minutes. Six T-62's manage to break out around the minefield and evade the airstrike. They are destroyed by direct fire from Teams C and Tank. The

remainder of the tanks (about eight T-62's) break off the attack and take cover in the village. Another airstrike destroys the remaining tanks.

FIGURE 5-31. GAS ATTACK ON TANK REGIMENT.



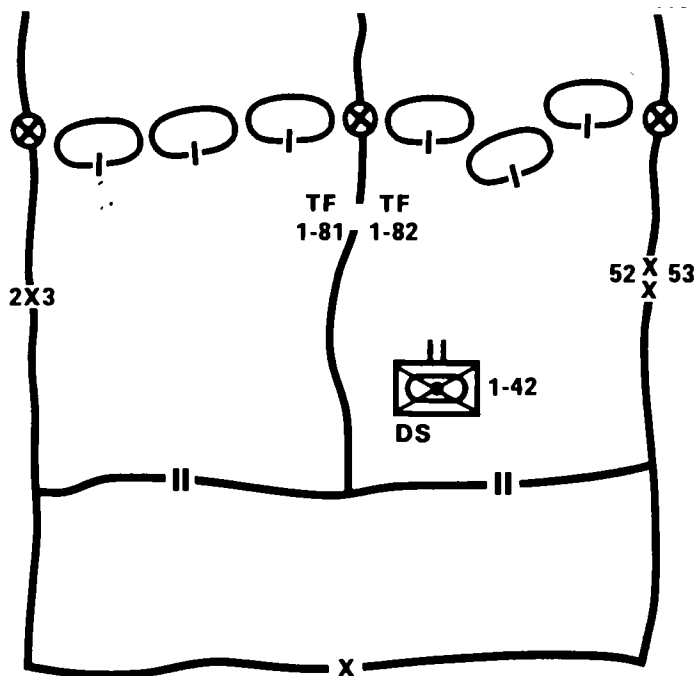
In the MBA defense example:

- The brigade CFL was continually moved to the rear as the penetration developed.
- Massed FA fires and scatterable mines permitted longer direct fire servicing time.
- Priority of FA fires was continually shifted to the forward company team.
- CAS was employed with FA to destroy a massed armor formation.
- The DS FA battalion positioned batteries without interfering with moving maneuver units.
- Coordination facilitated continuous fire support during rearward passage of lines.
- Coordinated direct and indirect fires were employed to exploit the use of the strongpoint.

5-12. Considerations in Supporting the Economy of Force Area

When the area of the enemy's main thrust is determined, forces are concentrated to meet it. At the same time, other portions of the defensive sector may have to be thinned out to provide more forces to concentrate. At best, the economy of force brigade will keep those forces initially allocated for the MBA in the basic defensive plan and perhaps receive some reinforcement from covering force elements. In our example division situation, the 1st and 3d Brigades have now become economy of force areas since the main thrust is coming in 2d Brigade sector. The 3d Brigade has two mechanized heavy task forces and a DS FA battalion to accomplish its mission of "defend in sector." While not in the area of the main thrust, 3d Brigade will still receive considerable pressure, perhaps as much as two or three enemy regiments. Based on this situation the 3d Brigade commander has deployed his elements as shown in figure 5-32.

FIGURE 5-32. THE 3D BRIGADE DEFENSIVE SECTOR.



IN AN ECONOMY OF FORCE AREA, MAXIMUM USE MUST BE MADE OF MASSED INDIRECT FIRES AND OBSTACLES TO DESTROY, SLOW, BLIND, AND CANALIZE THE ENEMY. THIS OPTIMIZES THE EFFECTS OF DIRECT FIRE WEAPONS AND COMPENSATES FOR THE FRIENDLY UNIT'S RESTRICTED ABILITY TO CONCENTRATE MANEUVER FORCES.

Task forces are initially assigned the mission to "defend in sector," as are other task forces in the MBA. Their goal is to destroy enemy forces and stop his forward movement forward of the battalion sector rear boundary. Therefore, these forces will plan to fight the battle in much the same way as the other MBA forces, except that they will be less able to concentrate maneuver forces and more dependent on massed indirect fires and obstacles. The task force will usually revert to delay tactics when required to preserve the integrity of the force.

If a deep penetration develops or flank(s) become vulnerable, the task force missions may be changed to "delay in sector." This mission will provide more flexibility to TF commanders to avoid loss of major portions of their force, stay in front of the enemy, and cover the flanks of their sector. The tactics employed in this case are similar to those of a delaying task force in the CFA.

Often it may be necessary to assign the task forces the mission to "delay forward of (*specified*) line until (*time*)."

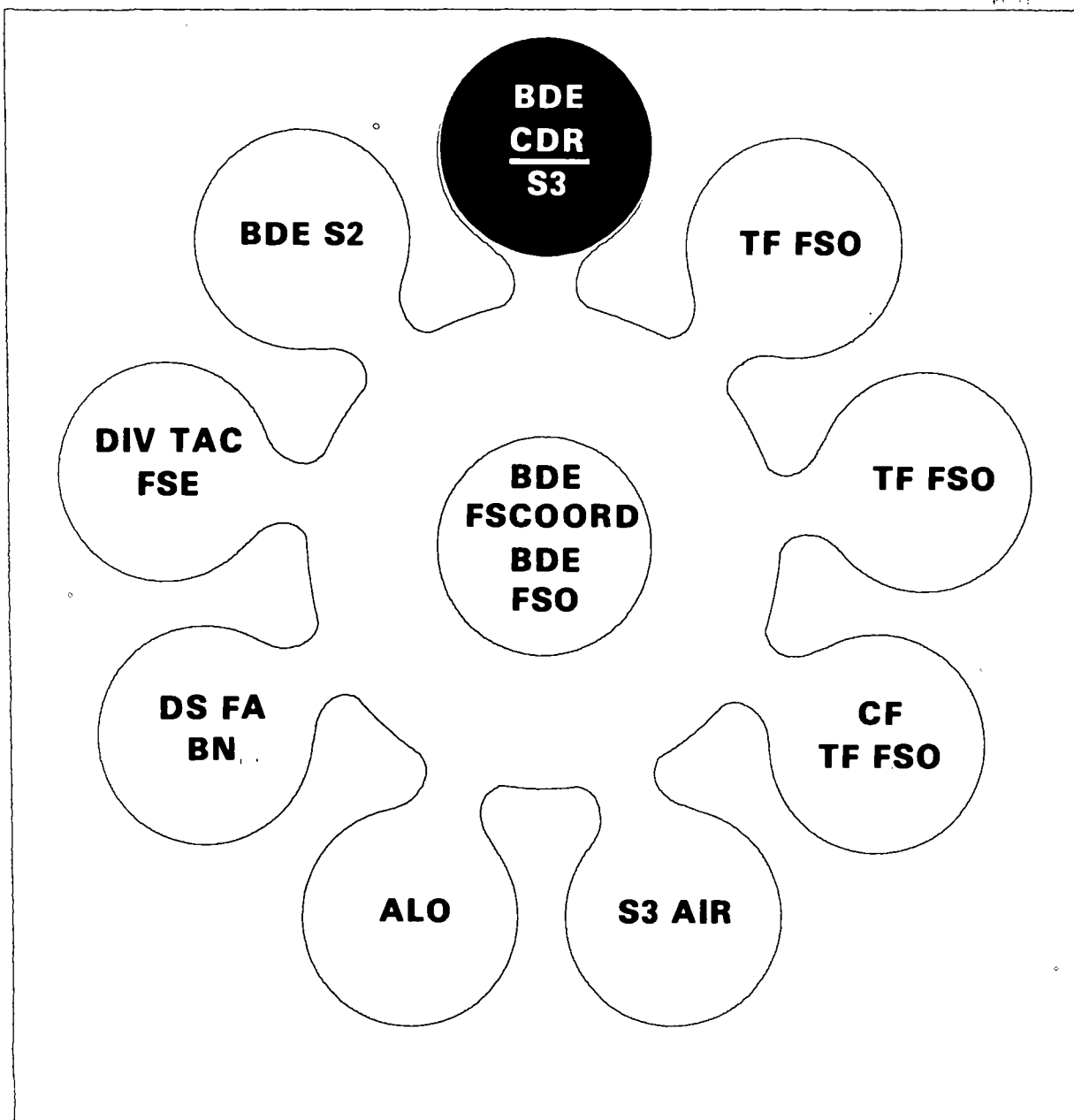
This is a high risk mission intended to buy time at significant cost, if necessary. In this case, the task forces are essentially "defending" for a period of time, exerting maximum pressure against the enemy.

If it is necessary for the economy of force brigade to fight deep to rear, there may be a point at which they must stop any further enemy advance. At that time brigade elements will assume whatever risk is necessary, and exploit all means available to stop the enemy.

☐ **Fire Support for the Economy of Force Area Brigade**

The FSCOORD at brigade level is the DS FA battalion commander. His contacts in the planning and coordination of fire support are shown in figure 5-33.

The FSCOORD in the economy of force sector faces many of the same problems as the FSCOORD in the main thrust sector. He also must coordinate a change of fire support

FIGURE 5-33. BRIGADE FSCoord/FSO CONTACTS.

responsibility (when the covering force cav squadron comes under command of the 3d Bde) and he must insure a smooth transition during the squadron's rearward passage of lines at the FEBA.

Like the forces in the main thrust area, the economy of force brigades must fully exploit the advantages of the defender. This is particularly true at the FEBA where terrain, obstacles, well prepared positions, and

detailed planning should allow the economy of force brigades to take a high toll of the relatively few threat units opposing them.

☐ Fire Support Assets

The economy of force brigade (in the example case the 3d Bde) will have its habitual direct support 155-mm battalion. It will also have access to the fires of the division GS and GSR battalions. It will have access to CAS assets; however, the 2d Brigade has priority.

Fire support of this FEBA fight will not differ greatly from that in the main thrust area except in the assets available. The battalions in the economy of force brigade will execute their FEBA battle plans much in the manner described in paragraph 5-11. Fire support here will emphasize maximum use of organic mortars and the DS FA battalion to slow, blind, and canalize the enemy to optimize direct fire weapons.

After the battalion TF's are forced to withdraw from their FEBA positions, however, the fight takes on many of the characteristics of the covering force battle. Here fires to assist in disengagement and withdrawal to new positions take on increased importance as the brigade seeks to inflict maximum casualties on the enemy without losing freedom of movement.

As the economy of force brigade approaches the brigade rear boundary, however, support of its operation will again resemble that in the main thrust sector as strongpoints and battle positions are established to hold forward of the rear boundary despite the cost. In all cases the brigade FSCOORD must focus his attention on the planning and executing of fires or targets of interest to the brigade as a whole. The battalion FSO's will plan and execute the close support fires. The brigade FSO should seek out deeper targets and whenever possible attack these with the division's GS FA and CAS while these engaged battalion

TF's are using the fires of the DS field artillery.

☐ Organization of the Fire Support System

The brigade commander will probably give priority of fires to the battalion TF in the most critical sector. Similarly at battalion level the commander and FSCOORD will assign priorities for FA and for battalion mortar platoons. In some cases the battalion commander may wish to *split* battalion mortar platoons to allow greater coverage of the sector by this organic asset.

☐ Positioning of Fire Support

Positioning of the brigade's DS FA battalion is extremely critical. Initially, firing elements will be in forward supplementary positions to support the covering force. Units will then move back to well-hardened positions echeloned in depth to support the FEBA fight. Alternate positions must be established from that point back past the brigade rear boundary to support the brigade's entire fight. Here nothing is more important than movement by echelon or battery, since with no reinforcing FA, if the DS battalion cannot provide continuous fires, there may be no FA fires.

☐ Coordination of Fire Support

Critical coordination occurs at the change of command of covering force elements and at the FEBA. After that, *lateral* coordination between brigade and adjacent battalion FSCOORD's in the 2d and 3d Brigades becomes extremely important. If enemy forces break through near the brigade boundary or if they enter the sector of either unit from the flank, then fire support must be used immediately to influence the situation until maneuver forces can adjust to deal with it. It is here that CAS and attack helicopters may be used to best advantage. For a discussion of attack helicopters reinforcing a unit by fire, see FM 71-2, *The Tank and*

Mechanized Infantry Battalion Task Force, chapter 5.

In the economy of force area:

- Organic mortars must be used to the fullest extent possible.
- Any available GSR FA, GS FA, or CAS should attack deep targets.
- The importance of moving DS FA by echelon cannot be overemphasized.

5-13. How to Support Light Infantry in the Main Battle Area

The concept of active defense previously discussed depends on the tactical ground mobility and massed firepower capabilities of armored and mechanized forces. *Light infantry forces lack the required mobility, firepower, and protection to conduct the active defense.* Light infantry elements can, however, complement heavy forces when employed in built-up areas, or in rugged, broken, or heavily forested terrain. Skillfully employed light infantry in the right terrain can defeat a numerically superior enemy force, even when the enemy is supported by some tanks.

□ Concept of Defense with Light Infantry

Light infantry forces fight from well prepared, carefully selected, relatively *fixed* positions. Such a defense *requires time* to study and prepare the terrain. In this *position defense*, units are arrayed linearly or in depth based on the enemy force and the terrain. Positions are selected to optimize those weapons that are most effective to defeat the enemy and neutralize his attempts to penetrate or bypass the defense. Once positions are occupied, *minimum movement* is anticipated. Movement is usually limited to nearby prepared alternate or supplementary positions.

The fundamentals of defense as described in paragraph 5-3 generally apply to light infantry forces. However, the skillful siting

and employing of weapons require even more emphasis. This requirement presents another fundamental of defense for light infantry: *Maximize Effectiveness of Key Weapons.* The defender must organize his defense around weapons most effective against the principal threat; e.g., TOW's against tanks, machineguns against infantry. In situations requiring defense against armor, positions are selected to exploit antiarmor weapons capabilities. Against lighter forces, machineguns and other antipersonnel systems (including mortars and FA) are the primary influence in selecting positions and organizing the force.

The fundamental of *concentration* is applied by *initial positioning*, meticulous *fire planning*, and rapid *massing* of all direct and indirect fires. Movement to concentrate is kept to the absolute minimum. The *primary* means of concentrating combat power as the battle develops is the timely allocation and application of mortars, FA, and CAS. When available, attack helicopters and naval gunfire also add significantly to the defender's ability to concentrate combat power. All these assets can be quickly shifted to critical points to delay, disrupt, or destroy an enemy attack. They can then be shifted again to concentrate against other enemy actions.

Fighting as a combined arms team is also critical to exploit the strengths and shield the vulnerabilities of all elements. *Complete integration* of all combat assets is critical because light infantry forces lack the mobility and firepower of heavier forces. Enemy force momentum, whether mounted or dismounted, must be reduced to permit effective application of all weapons systems. For example, artillery attacks the enemy at long range, employing scatterable mines where appropriate to slow, canalize, and destroy the enemy. Engineers help improve obstacles and minefields. Tactical aircraft add massed fires, and antitank weapons destroy individual vehicles. Every combined arms element assists.

□ Forms of Defense with Light Infantry

There are two basic forms of defense for light infantry—the linear position defense and the position defense in depth. The *linear position defense* emphasizes interlocking and overlapping observation and fields of fire along the FEBA to preclude penetration or loss of specific terrain. Forces are employed well forward in prepared positions to stop enemy forces as far forward of the FEBA as possible. Small reserves reinforce, thicken the defense, block penetrations, or conduct small counterattacks to regain terrain.

The *position defense in depth*, employed along high speed avenues of approach, contains a series of mutually-supporting antiarmor battle positions on armor restrictive terrain. Antiarmor positions are protected by infantry and strengthened by obstacles. Battle positions are *arrayed in depth* with forces *remaining in position* except for local or internal movement. Depth is derived from initial positioning—not maneuver. The position defense in depth is designed to defeat a mounted enemy forward of the battalion rear boundary with simultaneous fires from multiple battle positions. The enemy is engaged at long range with indirect fires, then by combined direct and indirect fires. Forces may move short distances to alternate and supplementary positions to continue firing and avoid being bypassed.

□ Fire Support Planning and Coordination in the Position Defense

The pattern of fire support planning and coordination considerations for the light infantry FSCOORD in the position defense are essentially the same as for a heavy unit in the active defense. However, certain areas need special attention.

□ Fire support makes up a greater portion of the commander's total combat power.

□ Massed fires are critical to reduce mobility of attacking forces to the level of the defender and canalize him into desired places for destruction.

□ Close defensive fires are more common because units reposition less frequently.

□ Organic 105-mm howitzers have fewer ammunition options (no scatterable mines or dual purpose improved conventional munitions).

□ Close air support is more often required to destroy large armored units.

□ Obstacles and fires must be meticulously planned to complement one another.

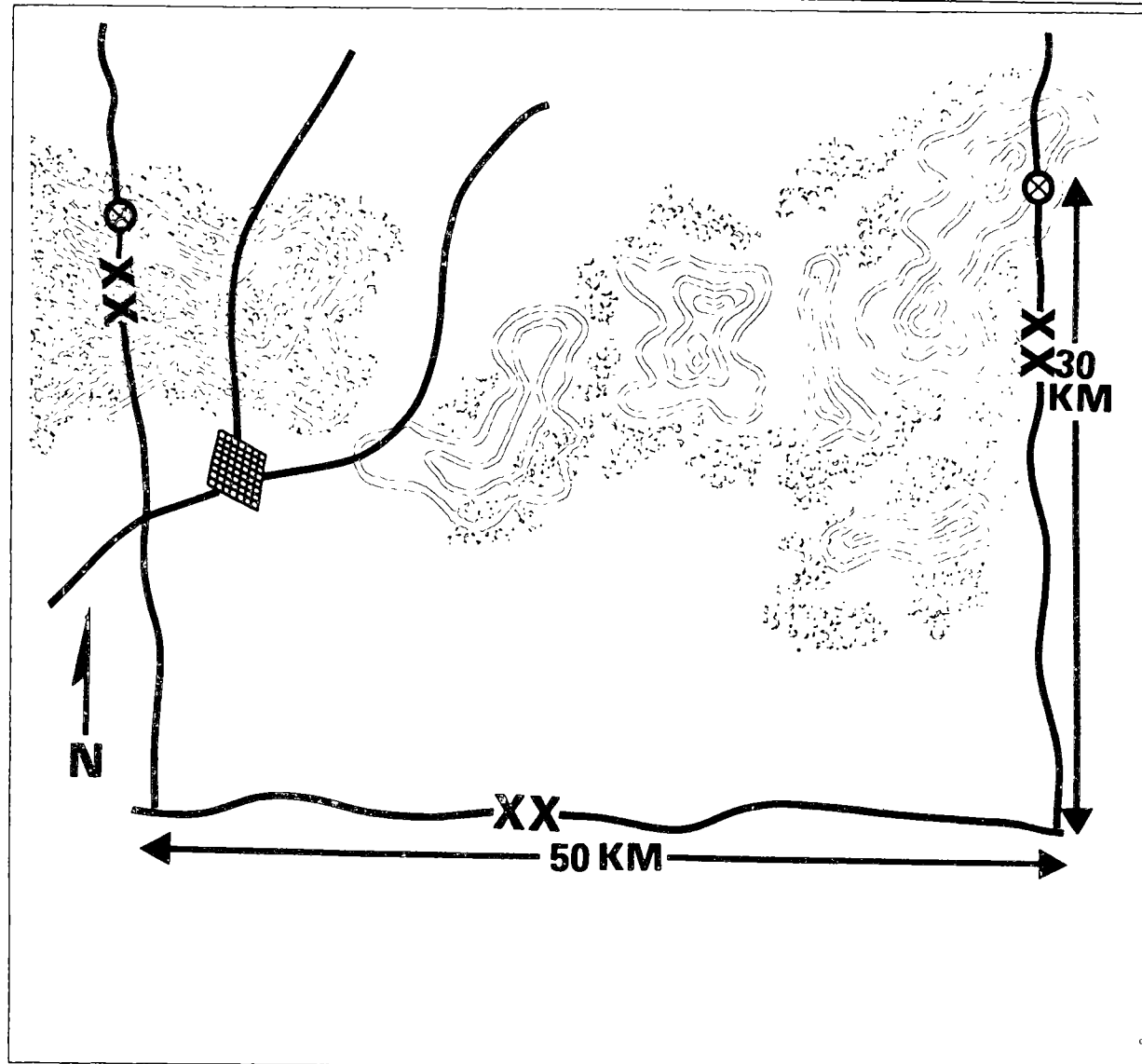
□ Counterfire becomes more critical due to less armor protection for friendly forces.

□ Situation 1 (Light Infantry Brigade Defense Against Heavy Forces)

The 54th Mechanized Division is defending in sector against elements of a combined arms army of two motorized and one tank division (fig 5-34). The terrain varies from a very restrictive, rugged, and heavily forested area in the west to an open and rolling area in the center, returning to hilly and sparsely wooded terrain in the east. A major communications network lies in the southwestern portion of the division sector and is protected by the rugged terrain to the north. Two large highways run through the division area, one through the open terrain and one through the rugged forested area. Both highways lead to and through the communications center.

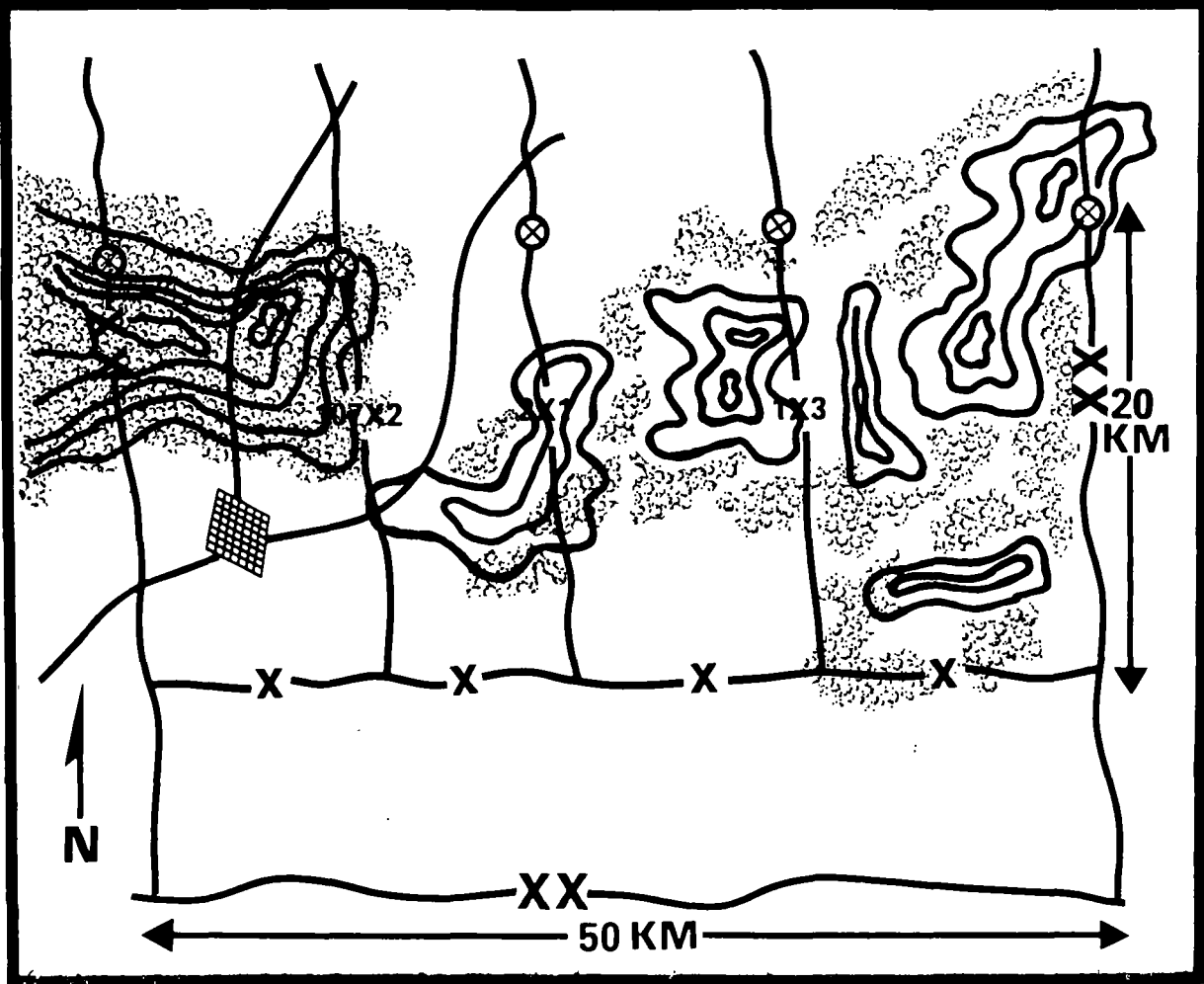
An enemy attack to secure the communications center would most likely be mounted along the open and rolling terrain in the left center of the division sector, and then turn west toward the town. If the enemy is unable to attack along this route around the rugged terrain, he will probably attempt to attack along the highway through the restricted area to punch some forces into the communications center on the south.

FIGURE 5-34. 54TH DIVISION AREA.



The 54th Mechanized Division is not well suited to combat in the rugged terrain in the west, which restricts its mobility. Therefore, the corps commander has attached the 107th Light Infantry Brigade to the 54th Mechanized Division to defend this restricted area. After analyzing the situation and forces available, the commander distributed his brigades as shown in figure 5-35.

FIGURE 5-35. 54TH DIVISION DEFENSE OVERLAY.



He employs the 3d Brigade on the east in the hilly and wooded terrain in a relatively wide sector. The 1st Brigade sector is narrower since the terrain opens up somewhat. The 2d Brigade is given a very narrow sector along the most likely high speed avenue into the division sector. The commander will *anchor* his defense on the west with the 107th Light Infantry Brigade in the rugged terrain (fig 5-36). Two

battalions of the brigade will be employed in depth along the highway and the third battalion will be positioned along the FEBA on the division left flank (tying in with the 20th Inf Div in the mountains on the west).

The covering force, composed from elements of 54th Mechanized Division and a corps ACR squadron, is about 36 km north of the FEBA (the corps ACR squadron is operating in the relatively open and rolling

CFA sector forward of the 107th Brigade). The division commander's intent is to concentrate mechanized and armored forces to blunt the enemy attack in the open and rolling terrain while preventing the enemy from getting through along the mountain highway. The 107th Brigade will retain the rugged terrain in the west and coordinate with the 2d Brigade to prevent the enemy from bypassing on the east. As divisional elements with the covering force return, they will be employed to further concentrate forces in the area of the enemy main attack.

If the enemy does attempt to attack through the rugged terrain, the 107th Brigade can expect to be confronted by at least a reinforced motorized rifle regiment. Because of the poor trafficability and dense vegetation in the area, the commander expects that motorized forces will dismount, if necessary, in their attempt to get through his defenses.

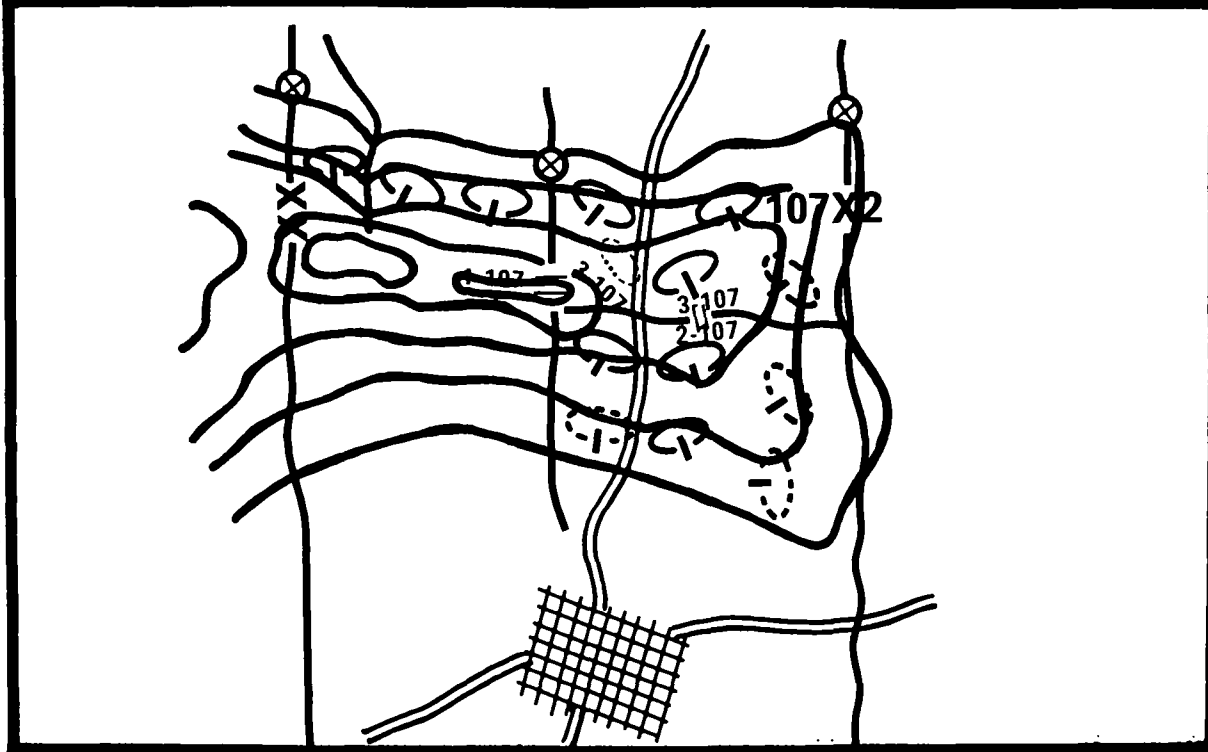
Vegetation is dense and observation and fields of fire are relatively poor, especially toward the upward portion of the hills. Several unimproved roads and trails go through the area. Only the highway through the saddle will accommodate a large number of vehicles at good speed. The commander must capitalize on every means available to reduce the mobility of the enemy and force him to attack dismounted.

Major assets available to the brigade include:

- three rifle battalions (three rifle companies and a combat support company each);*
- organic DS FA battalion (105-mm, towed);
- organic engineer company;
- access to GS and GSR FA from 54th Division artillery units in range; and
- access to division CAS sorties.

*Each rifle company has a TOW section of 2 TOW's and 9 dragon trackers.

FIGURE 5-36. LIGHT BRIGADE DEFENSE IN DEPTH.



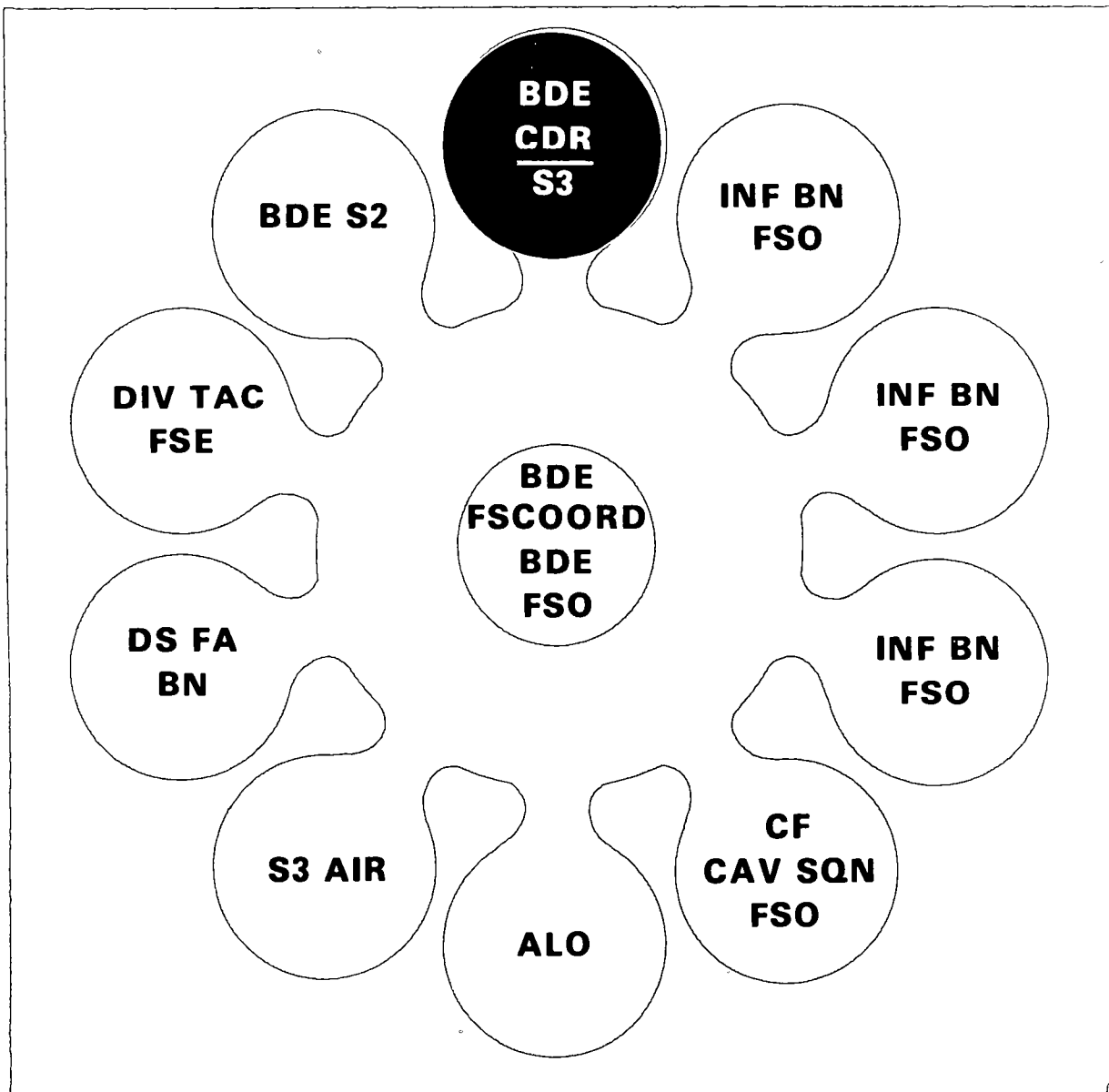
Each combat support company has an antitank (AT) platoon with 12 TOW's.

□ FSCOORD Activities

The FSCOORD for the 107th Light Infantry Brigade is the 105-mm DS battalion commander. He is assisted by the brigade fire

support officer located at the brigade TOC. The FSCOORD's fire support responsibilities will include supporting the 107th Brigade defense and supporting the 2-201st Cavalry (covering force element) when it comes under control of the 107th Brigade at a point forward of the FEBA. The FSCOORD's contacts are shown in figure 5-37.

FIGURE 5-37. FSCOORD CONTACTS.



Close coordination between the ACR squadron FSO, the 107th Brigade FSO, and the FSO's of the two forward infantry battalions is needed to insure that the change of command and control and subsequent rearward passage goes smoothly. The passage of FA support responsibility for support of 2-201st Cavalry is facilitated by the fact that the batteries of the 105-mm battalion fire in support of the 2-201st Cavalry from forward supplementary positions prior to the change of command and control.

Specific fire support tasks for light infantry in the MBA orient on close support of maneuver forces with special emphasis on integrating indirect fire with the fires of the TOW and DRAGON. Coordination and timing of these fires will be especially critical since the restrictive nature of the terrain will cause most direct fire engagements to take place at closer range than in open terrain. Protective fires for friendly elements are more critical because they have less mobility and cannot disengage as easily as heavy forces.

Counterfire becomes critical because light infantry, especially when it is moving, is extremely vulnerable to enemy indirect fires. Further, the brigade has only one FA battalion, and it has limited range (11,500 meters) and no DPICM or FASCAM ammunition capability. The link between the brigade, its DS battalion, and division artillery is particularly critical if additional FA fires are to be obtained, especially DPICM or FASCAM. In this case, the 54th Division Artillery positioned one of its corps reinforcing 155-mm battalions within range to provide these fires as required.

In our example case, fire support assets *at the brigade level* were oriented to meet the following needs.

- Priority of FA fires was given to 3d Battalion, 107th Infantry, astride the major avenue of approach into the brigade area.
- The brigade commander allocated two of the 105-mm battalion FPF's to 3-107th Infantry and one to 1-107th Infantry.

KEY FIRE SUPPORT TASKS FOR LIGHT INFANTRY IN THE MBA ARE:

- **CLOSE SUPPORT OF MANEUVER FORCES,**

- **INTEGRATION OF INDIRECT FIRES WITH THE FIRES OF THE TOW AND DRAGON,**

- **PROTECTIVE FIRES FOR FRIENDLY ELEMENTS,**

- **COUNTERFIRE, AND**

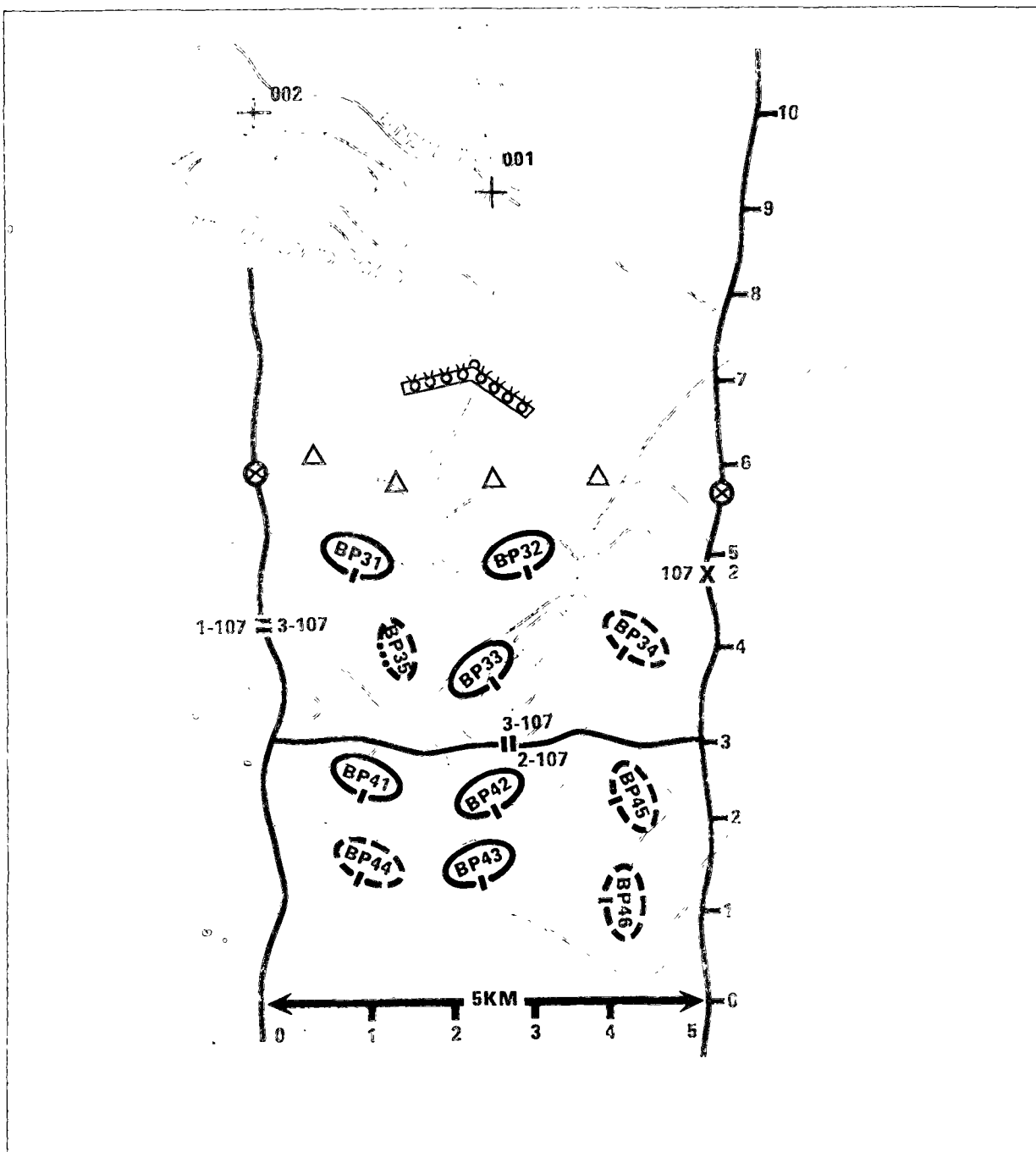
- **AUGMENTATION OF THE FIRES OF THE DS FA BATTALION WITH FIRES FROM DIVISION ARTILLERY BATTALIONS.**

Fires were planned on targets critical to the brigade—specifically the bridge and the protected assembly area in the center of the

brigade sector (Tgts 001 and 002). (See figure 5-38.)

After moving from the forward

FIGURE 5-38. BRIGADE KEY TARGETS.



supplementary positions from which it supported the covering force, the FA battalion was positioned in defilade on the reverse slope of the hill complex near its base. Due to positioning requirements and range limitations, division artillery will engage long-range targets with GSR or GS units. Coordination on deep targets was made with 54th Division Artillery to provide additional fires as required. Counterfire operating procedures were confirmed and an additional Q4 radar was positioned to assist target determination in that sector. The availability of any of these GS and GSR units is, of course, subject to the need for fires in the anticipated breakthrough sector.

Close air support was planned on the major road ascending the saddle in the center of 3-107 sector. Several other predicted target areas that could accommodate significant armored formations were planned. Since most of the division close air support will probably be working in and around the 2d Brigade sector, the 107th Brigade close air support requirements may be filled with aircraft diverted from other targets at the last minute. The brigade must be able to act quickly in this case to use whatever CAS is available. Often because of restrictive terrain, forward air controllers will not be able to move from position to position to control airstrikes. Therefore, all FIST teams must be prepared to act as forward guides to direct CAS. Mortars and FA must be prepared to mark targets with smoke if necessary. Fire support coordinating measures for the brigade include a CFL.

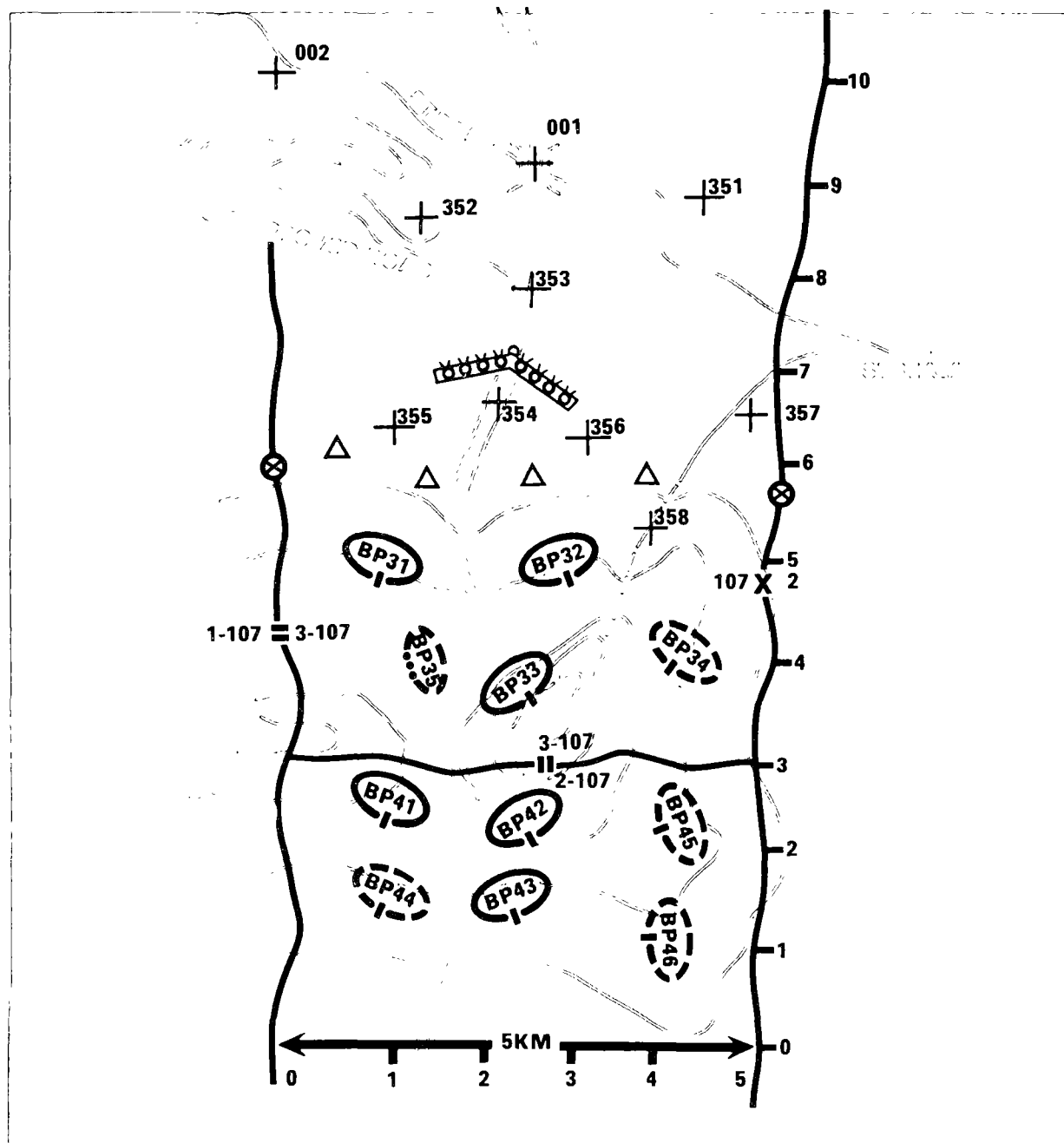
At the battalion level, fire support available includes the organic battalion and company mortars, as well as access to the DS battalion supporting the brigade. FA and mortar fires are planned to slow and canalize the enemy. The commander and FSO of 3-107 are particularly concerned with the high speed approach between battle positions (BP) 31 and 32. If attack of targets along this approach is to be effective it must allow for coordinated target attack from both battle positions. The battalion commander picks

RESTRICTIVE TERRAIN MAY HAMPER THE MOVEMENT OF FORWARD AIR CONTROLLERS, THUS REQUIRING FIST'S TO DIRECT AND CONTROL CAS STRIKES. THE FIST MUST ALSO BE PREPARED TO EMPLOY MORTARS AND FA TO MARK TARGETS WITH SMOKE FOR CAS ATTACK.

two probable engagement zones (the road junction and the mine area south of the bridge) and the FSO plans FA fires and CAS there—Targets 353 and 354. Covered and

concealed dismounted approaches are also targeted, with the 3-107 FSO paying particular attention to the wooded draw between BP 32 and BP 34 (fig 5-39).

FIGURE 5-39. BRIGADE AND 3-107 KEY TARGETS.

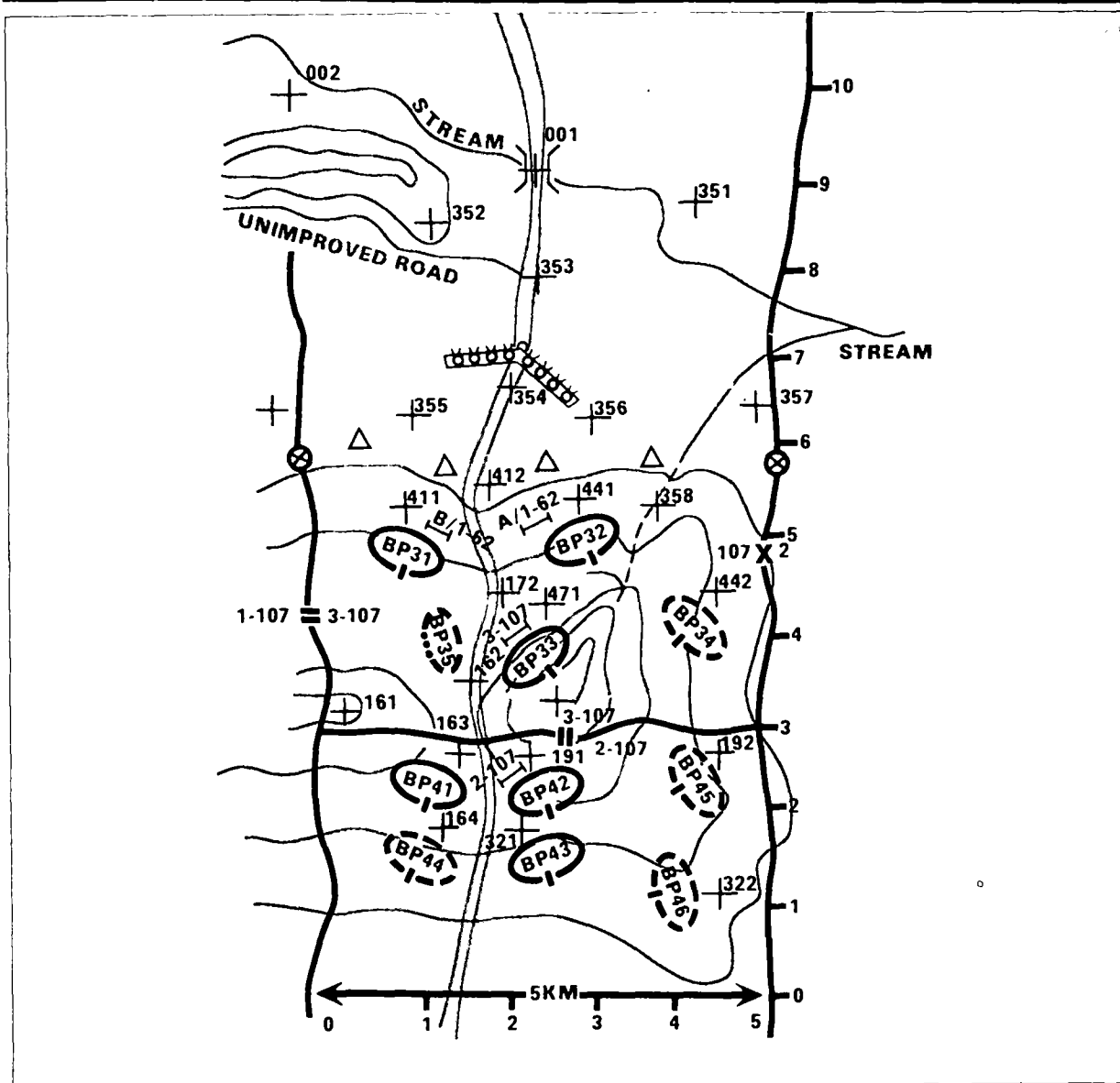


Gaps between companies are covered with indirect as well as direct fire to prevent infiltration or penetration by dismounted troops. Final protective fires (FPF) are allocated to the most threatened areas to provide massive fires to break up enemy assaults and are closely tied in to machinegun final protective fires in and

between company battle positions.

At company and platoon level, FIST members plan long-range fires to facilitate direct fire engagement, defensive fires directly in front of their positions, and fire to cover their withdrawal should they reposition (See figure 5-40.)

FIGURE 5-40. TARGETS FOR DEFENSE IN DEPTH.



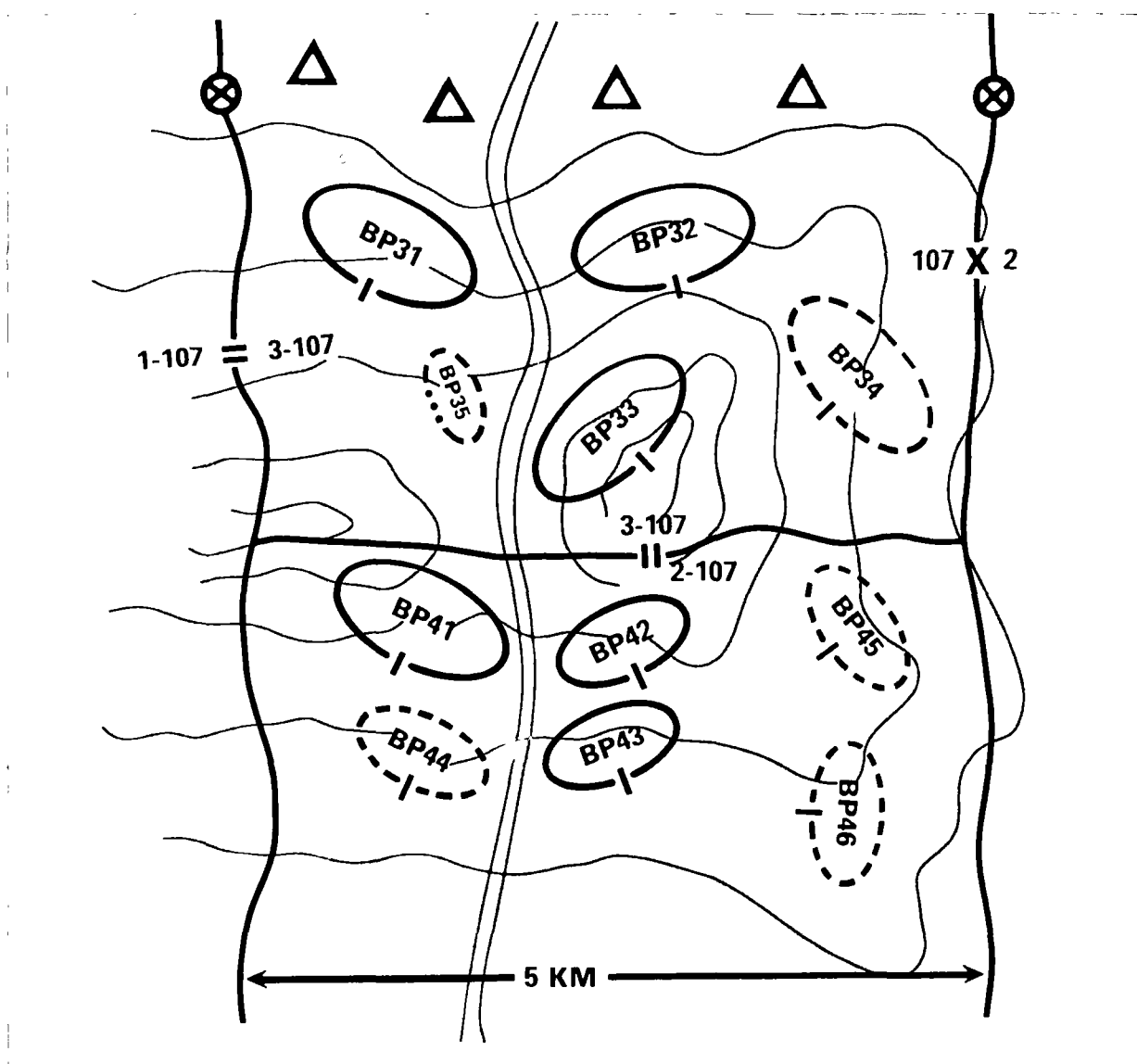
□ Application of Fire Support in the Light Infantry Brigade

The 107th Brigade has been in position about 36 hours, and the division covering force elements have passed into the MBA. The enemy main attack is coming toward the 2d Brigade to the east. The 2-201st Cavalry passed through the 107th Brigade and returned to division control. Other covering

force maneuver elements are attached to 2d Brigade to thicken the defense of that sector. As the battle develops and the enemy is significantly slowed and disrupted in the 2d Brigade sector, some elements of the enemy force appear to be moving toward the highway approach through the 107th Brigade sector (fig 5-41).

Scout elements of 3-107 in the area of the

FIGURE 5-41. 3-107 AND 2-107 DEFENSE.



highway report the approach of a motorized rifle company (about eight BMP's) and three tanks at a range of about 4,000 meters. Scouts call for long-range fires on the enemy and continue to report the specific direction and approach of all enemy elements.

The battalion commander decides to engage them with TOW's in the security force as soon as they come within range. Mortar and FA fires are coordinated to complement the TOW fire. As the scouts engage with TOW's, the battalion FSO calls for smoke behind the enemy company to isolate deeper enemy forces from the engagement area. The combined fires of the FA and mortars slow the enemy considerably and TOW fires destroy two tanks and seven BMP's. The scouts and TOW's then withdraw to the MBA under cover of FA and mortar fires.

The battalion commander, located at BP 33, observes a motorized battalion reinforced with tanks continuing along the same approach. He directs the companies in BP 31 and BP 32 to fire at his command. He wants to have the enemy deploy in the vicinity of the large mine field 2,000 meters forward of the battle positions. He also requests a CAS strike on the following elements of the enemy regiment. As the enemy deploys near the minefield, the combined massed fires of both companies together with suppressive FA and mortar fire cause the force to deploy, suffering heavy attrition. Approximately one-third of the enemy battalion regroups and continues the attack with increasingly heavy enemy artillery fires directed against BP's 31 and 32.

Enemy smoke on BP 31 and BP 32 obscure gunner vision and gunners are unable to see targets clearly. About 15 vehicles approach within 300 meters of BP 31 and BP 32 before they can be observed and engaged. Elements from BP 33 add their TOW fires to the TOW and DRAGON fires from BP 31 and BP 32 to destroy the remaining enemy.

The main elements of the regiment continue the attack. As they approach the battalion sector, some security elements

move to the flanks. These elements are engaged with mortars and FA to impede their movements and the main body continues up the draw. The FSO had previously requested close air support through the ALO to engage this large armored column. As the main body approaches the area near BP's 31 and 32, companies there request FA and mortars to isolate the main body from its security elements and reinforcements. TOW's and DRAGONS engage tanks and BMP's destroying several and causing infantry to dismount to root out ATGM's. Mortar fires and FA HE-VT and AP-ICM are adjusted on these forces to destroy their attack.

In the meantime, the CAS arrives at station. In the midst of the battle, due to obscuration and confusion, the ground FA cannot see the target area from his position, but the FIST chief from BP 31 can. The FIST chief uses prominent terrain features to direct the fighter aircraft to the target area. He marks the target area with smoke, and sends corrections through the ALO using cardinal directions. The four F-10's begin their attack of the column. FA is adjusted and timed to strike in the target area to complement the dead space between aircraft runs to provide continuous fires on the enemy. These combined fires destroy the bulk of the column and the few remaining enemy begin withdrawing. Fires are adjusted on the fleeing enemy to complete their destruction.

□ **Situation 2. (Light Infantry Battalion Defense Against Infantry)**

The 1st Battalion, 67th Infantry, as part of the 2d Brigade, 21st Infantry Division, is defending in sector against an enemy infantry force. The brigade has an FA battalion in direct support and 12 CAS sorties to support the defense. The battalion mission is to "defend to prevent an enemy crossing of Blue River." The enemy can attack with an estimated infantry regiment. Tanks can reinforce the attack *only* if a bridgehead is secured. The terrain is broken

and hilly with alternating wooded and open areas. Vehicular movement is restricted by steep slopes and heavy woods. The Blue River is unfordable to vehicles. Without special equipment or some delay, infantry can cross only at High Shoals or Red Ford.

Major assets available to the battalion for this defense include

3 rifle companies (2 TOW's, 12 dragons, 3 company mortars ea),

1 combat support company (12 TOW's, 4 battalion mortars),

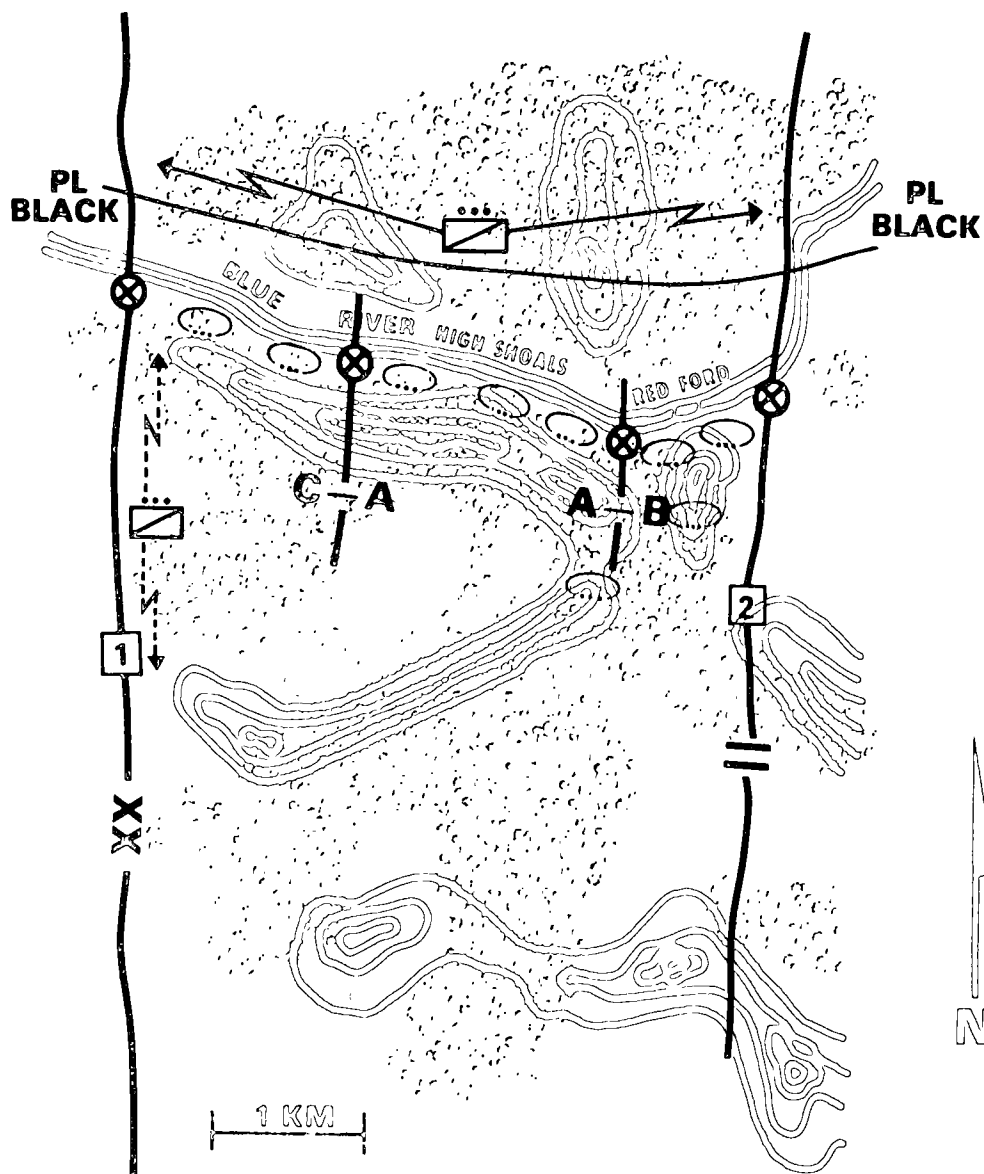
1 engineer platoon (DS), and
priority of fires from BDE DS FA battalion.

**CAREFUL AND COMPLETE USE OF
FIRE SUPPORT IS ESSENTIAL TO
ATTACK THE ENEMY AT LONG RANGE,
PREVENT HIM FROM MASSING FOR AN
ATTACK, AND STOP HIS FORCES
FORWARD OF THE FEBA.**

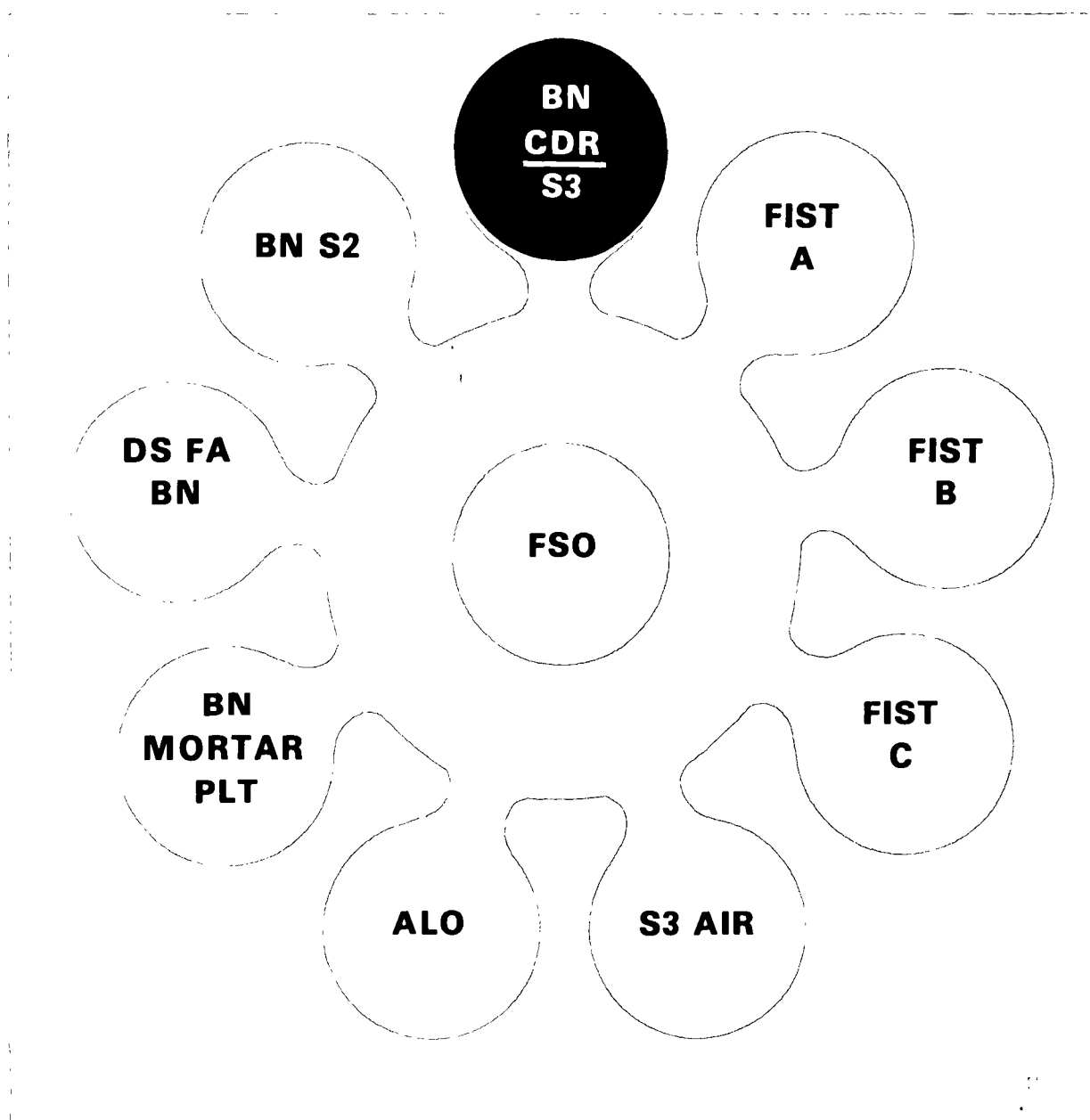
After analyzing his mission, the situation, and the terrain, the battalion commander distributed his forces as shown in figure 5-42. He weighted the defense in the east with a narrow sector for B company and gave B company priority of fires. He also positioned his one platoon reserve in depth behind B and A companies, along the most dangerous avenue of approach. Engineers will assist units installing underwater wire and mines along the river in the battalion sector. Scouts, with remote sensors attached, will screen north of PL BLACK; then, on order, screen the battalion left flank. The scouts will be prepared to reinforce Company C if necessary.

The commander intends to stop the enemy forward of the FEBA (Blue River) by engaging him when detected with long range fires and preventing him from massing for an attack at any point along the FEBA. Careful and complete use of fire support is essential to this plan. He will use the reserve platoon to reinforce a threatened sector, or block or counterattack any enemy success, as necessary. Movement of forces will be kept to the minimum. Whenever they must move, heavy smoke and HE-VT suppression of enemy locations will cover the movement. The commander must depend on a well conceived plan of fires to provide the shifts in combat power that he needs.

FIGURE 5-42. BATTALION DEFENSE PLAN.



- Fire support assets in this case include
- company and battalion mortars,
 - access to the fires of the brigade's DS 105-mm howitzer battalion and a GSR 155-mm battalion, and
 - priority for planning the 12 CAS sorties

FIGURE 5-43. FSCoord CONTACTS.

distributed to the brigade.

The 1-67th battalion FSCOORD is the FSO from the brigade's DS FA battalion (fig 5-43).

While the FSO's role as FSCOORD of an infantry battalion defending against a light threat is similar to his role in a heavy threat defensive environment, there are some important differences. He is less concerned, for example, with the roles of slowing and "buttoning up" armored vehicles and with augmenting the long-range fires of antitank weapons. He is more concerned with integrating close-in fires with automatic weapons coverage and with planning massed fires to destroy concentrations of dismounted troops. At battalion level the fire support tasks include

- providing close support to companies;
- fires to attack massed targets acquired by battalion sources (OP's, scouts, etc.);
- fires to support any battalion counterattack; and
- fires to support disengagement and withdrawal.

In this case, brigade has planned fires beyond the battalion sectors—concentrating on likely assembly areas, avenues of approach, and on targeting input from all source intelligence.

The 1-67th Battalion FSO must coordinate with the battalion S2 to insure that the best possible fire support is given to the scout platoon and that targeting information from the scout platoon, and any other battalion source, is rapidly reported to the battalion FSE for attack as appropriate.

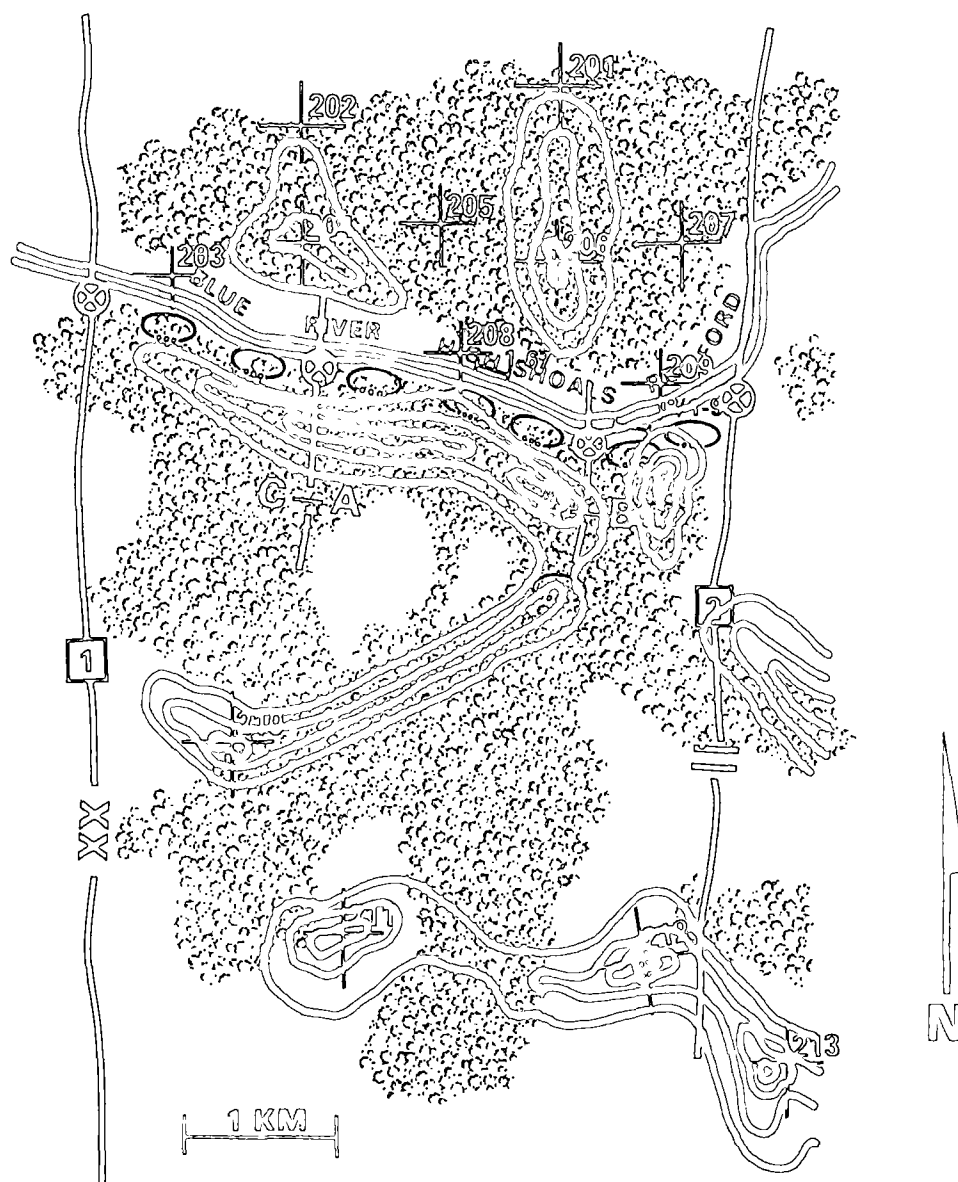
The battalion FSO then planned fires on those targets that the battalion commander considered critical to the battalion's mission. These included FA and CAS targets planned on critical avenues of approach; i.e., High Shoals and Red Ford, and fire support positions north of the Blue River.

The battalion FSO then met with the FIST chiefs in A and B Companies to coordinate the fires that had been planned in the key High Shoals and Red Ford areas (fig 5-44).

FIRES ARE PLANNED WELL BEYOND BATTALION SECTORS TO ENGAGE THE ENEMY WITH LONG-RANGE FIRES AND PREVENT MASSING FOR AN ATTACK. AT THE SAME TIME, THE PLAN OF FIRES MUST BE FLEXIBLE ENOUGH TO PROVIDE THE COMMANDER WITH THE SHIFTS IN COMBAT POWER HE WILL NEED AS THE BATTLE DEVELOPS.

He then coordinated with the ALO to work out plans for response time, target marking, preferred ordnance, and troop safety for use

FIGURE 5-44. 1-67 TARGETS.



of CAS against massed assault troops along avenues of approach into Companies B, A, and C and against possible crossings at High Shoals and Red Ford.

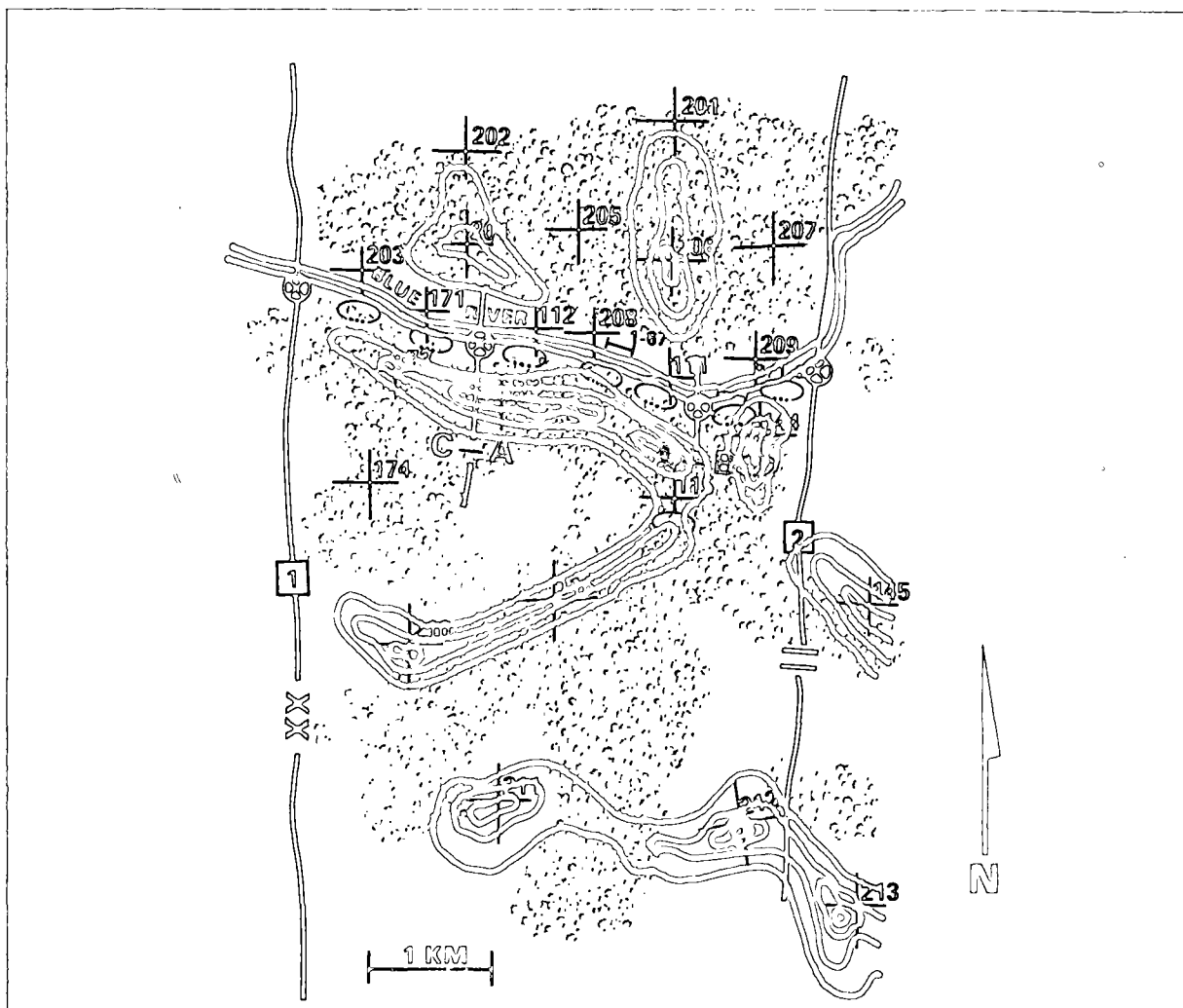
FIST's developed plans for the defense of their positions. These include

- coordinated fires on avenues of approach out to the limit of their unit's automatic weapons;
- longer range fires out to the limit of visibility;

- defensive fires (to include FPF's when allocated) immediately in front of their positions (fig 5-45, co and bn targets); and
- fires to cover withdrawal and/or repositioning of platoons.

The FSO recommends to the battalion commander that the CFL in the battalion sector be placed out 2 kilometers beyond PL BLACK while the scouts are north of the Blue River, and that it be brought to the vicinity of PL BLACK after the scouts withdraw.

FIGURE 5-45. COMPANY AND BATTALION TARGETS.



**SPECIFIC FIRE SUPPORT TASKS TO
SUPPORT THE LIGHT INFANTRY
BATTALION DEFENSE AGAINST A
LIGHT THREAT ORIENT ON:**

- **RESPONSIVE, CLOSE SUPPORT
TO THE COMPANIES,**
- **FIRES TO SUPPORT
DISENGAGEMENT AND WITHDRAWAL,**
- **COUNTERFIRE,**
- **INTEGRATION OF CLOSE-IN,
FIRES WITH INFANTRY DIRECT FIRE
WEAPON COVERAGE,**
- **MASSED FIRES TO DESTROY
ENEMY TROOP CONCENTRATIONS,
AND**
- **FIRES TO SUPPORT BATTALION
COUNTERATTACKS.**

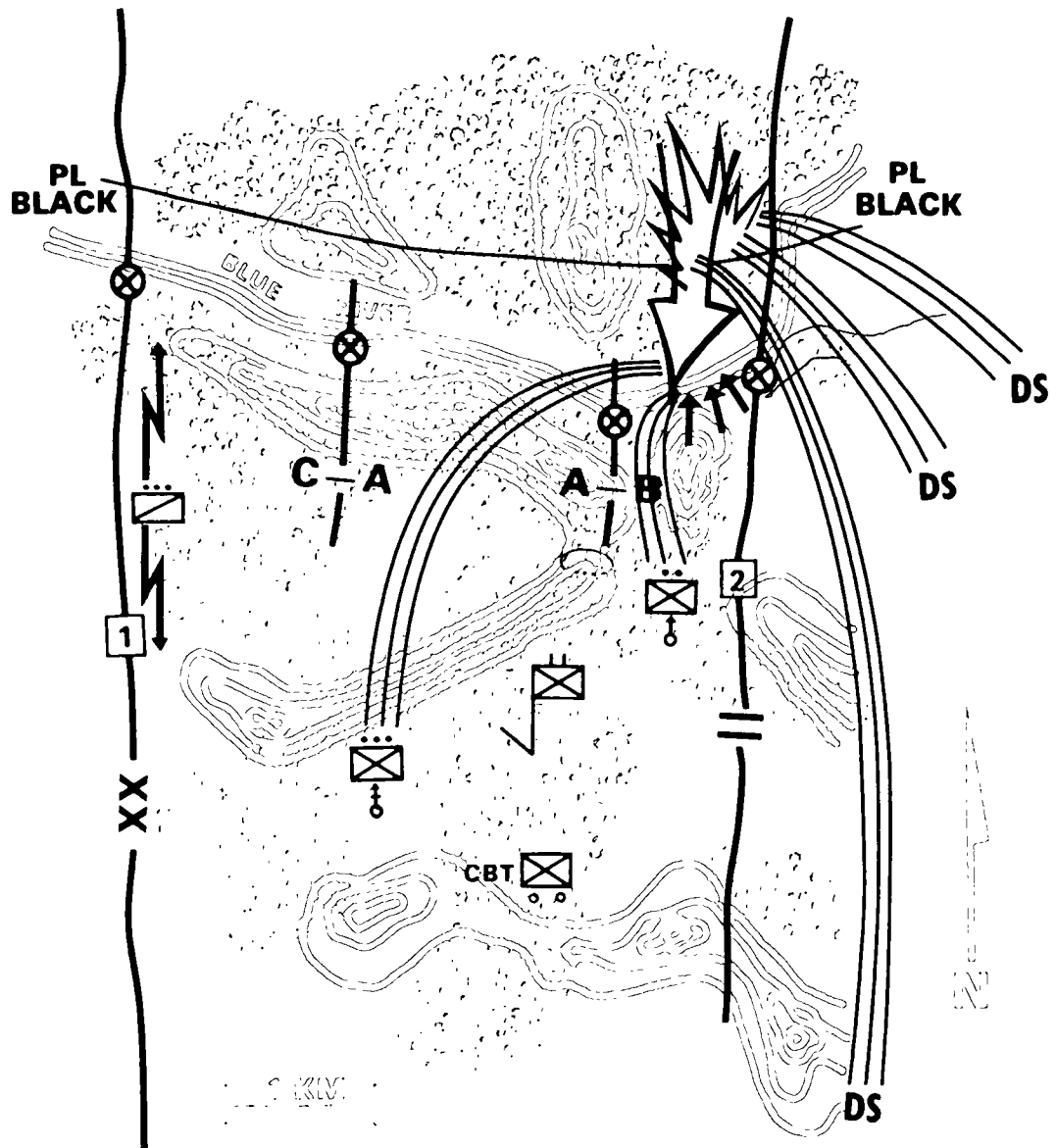
□ **Application of Fire Support in
the Linear Position Defense**

Sensors put out by the scout elements detect the enemy approaching on the right flank toward Company B at a range of 1,200 meters from PL BLACK. The scout element calls for FA HE-VT fires on the sensor reading site. Enemy movement continues and Company B calls for additional fires on targets detected by sensors and visual observation in its sector. Other enemy movement is detected north of Company A where scout elements call for battalion mortar fire. The battalion commander orders the scouts to withdraw. The battalion FSO then requests fires from battalion mortars and continues FA fires to cover their withdrawal.

Enemy smoke comes in on Red Ford and the hill occupied by Company B. Company B FIST chief requests counterfire through the DS battalion. Enemy elements continue to move under smoke cover and begin a hasty crossing of Blue River in small inflatable boats. Company B engages visible enemy elements with small arms, machineguns, and LAW's. The 1st Platoon FO adjusts company mortars on the enemy in the river and the 2d Platoon FO adjusts battalion mortars on the far bank. Company B FIST chief requests an FA battalion mass mission on enemy follow-on elements in the vicinity of PL BLACK. The battalion three volley AP-ICM fire lands in 3 minutes. These fires and the combined fires of mortars and direct fire weapons repulse the enemy attack (fig 5-46).

Enemy indirect fires increase significantly as he prepares to make a major attack. Enemy suppression is effective and prevents observation from many Company A and Company B positions. Counterfire is requested by Company A and Company B FIST chiefs. The enemy begins attacking on a broad front with about a battalion facing Company B, a battalion facing Company A, and a company-sized element in front of Company C (fig 5-47).

FIGURE 5-46. COMPANY B ENGAGES HASTY CROSSING ATTEMPT.

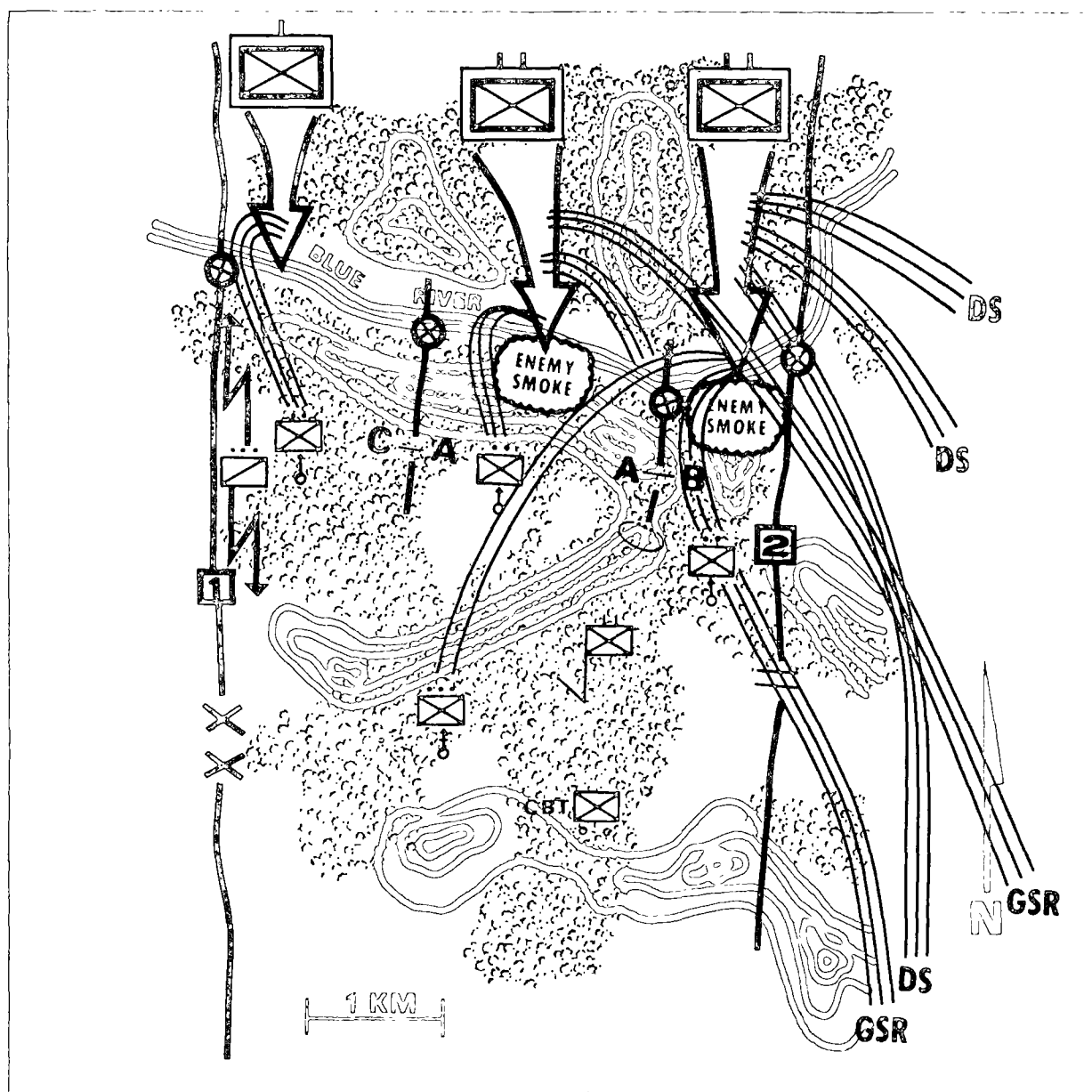


Company B FIST chief requests FA AP-ICM on enemy forces on the far bank while two platoon FO's call for battalion and company mortars, respectively. These fires combined with machineguns and LAW's disrupt and finally stop the enemy attack.

Many rafts and boats in this and the other sectors are destroyed by the underwater mines or are hung up on wire and destroyed by direct fire and HE-VT.

Company A and Company C have both been employing their company mortars on

FIGURE 5-47. ENEMY CROSSING ON BROAD FRONT.



forces in the river and on the edge of the far bank. Company A FIST chief calls for FA HE-VT on a larger enemy element approaching the far river bank. He receives this fire from the GSR FA battalion, since the brigade DS battalion is currently finishing the Company B massed fire mission. During this time Company C has been able to drive back the attempted crossing in its sector with rapidly shifting company mortar fire and direct fire weapons.

Despite the heavier fires placed on the enemy in Company A sector, the attack continues and additional enemy forces are committed in that area. The enemy finally gets a reinforced platoon across the river and attempts to bring crew-served weapons across. The battalion commander directs a shift of priority of fires from Company B to Company A.

Reinforcements attempting to cross in Company A sector are repulsed as massed FA AP-ICM and battalion mortars and direct fire weapons are concentrated on the crossing site. Company A FIST chief requests the battalion FSO to arrange for mortar fires from Company C on the far bank on the left of Company A sector and the same from Company B on the right of Company A sector to completely seal off the enemy attack. Company C mortars respond, but Company B mortars are shooting at dispersed elements withdrawing north from Company B. When they finish this mission, they will fire to assist Company A.

Company A commander reports that he has the enemy platoon on the near bank pinned down but does not have enough forces to dislodge him. The battalion commander attaches the reserve platoon to Company A to counterattack to destroy the enemy force south of the river. As the reserve platoon moves by a covered and concealed route to join Company A (in the vicinity of the right-hand Company A platoon) the Company A FIST chief adjusts the FA battalion's AP-ICM fires on the enemy foothold while battalion and Company A mortars are fired on the flanks (fig 5-48).

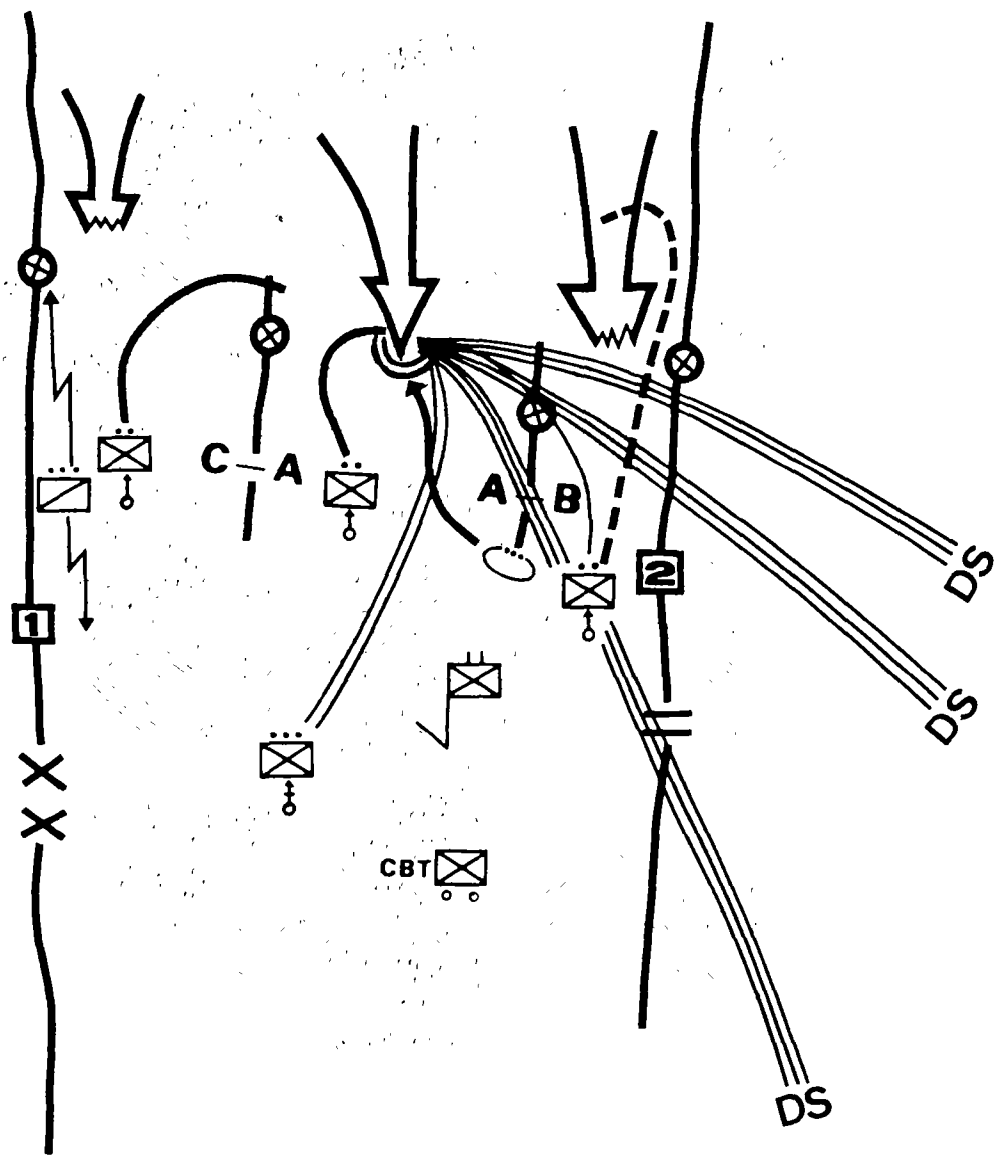
PRIORITY OF FIRE SUPPORT IS SHIFTED AT THE CRITICAL TIME TO THE MOST CRITICAL AREA IN THE BATTALION DEFENSIVE SECTOR. A HEAVY VOLUME OF COORDINATED MORTAR AND FA FIRE IS REQUIRED TO:

- SEAL OFF THE ENEMY FOOTHOLD,
- DESTROY HIS PINNED-DOWN TROOPS, AND
- SUPPORT THE COUNTERATTACK TO DESTROY THE REMAINING ENEMY.

The reserve platoon arrives at its attack position near the right platoon of Company A. Just before they move to attack west, the FA battalion mass mission lands on the enemy position. The combined fires of Company A and indirect fires destroy most of

the enemy force. Fires are shifted just to the west and north of the reserve platoon as they counterattack. The reserve platoon sweeps across the area and destroys the few remaining enemy.

FIGURE 5-48. COMPANY A COUNTERATTACK.



5-14. Fire Support for Retrograde Operations

□ Characteristics of Retrograde Operations

Retrograde is a movement of a command to the rear or away from the enemy. It may be forced by the enemy or may be voluntary. Retrograde may be necessary when

- friendly forces are insufficient to attack or defend making it necessary to exchange space for time,
- the command is to be employed elsewhere or in a better position,
- continuation of an operation no longer promises success, or
- the purpose of the ongoing operation has been achieved.

Retrograde operations are often conducted across wide frontages under dynamic and frequently vague conditions. Severe strain is placed upon communications systems. Control and coordination is difficult. Since a force in the retrograde is usually greatly outnumbered, skillful application of fire support is essential. FA supporting a retrograde movement must be as mobile as the supported force. The type of retrograde operation—DELAY, WITHDRAWAL, or RETIREMENT—depends on the purpose of the rearward movement.

□ Types of Retrograde Operations

Delay. In a delay a force under pressure trades space, or possibly combat losses, for time. Time is usually best gained when *maximum casualties* are inflicted on the enemy. The normal concept of the delay is to force the enemy to concentrate his forces and form for an attack at each delay position. Just when the enemy achieves this concentration, friendly forces pull back to the next delay position. Because smaller elements of a delaying force must often *defend*—suffering combat losses—the *delay is the most demanding of all ground combat operations*. If the enemy is stronger and time is available, the division will probably

establish a covering force. Otherwise, brigades will conduct delays in their own sectors.

Withdrawal. A withdrawal is conducted to disengage a force from the enemy. It may be conducted separately, but is normally part of a larger delay operation. Disengagement is difficult, timing is critical, and careful planning is essential. Armored and mechanized units may break away rapidly, but less mobile units usually rely on deception, obstacles, indirect fire, or clever use of terrain to make a clean break.

A *withdrawal without enemy pressure* depends upon surprise. It is often conducted during periods of reduced visibility and is supported by a deception plan. Plans must also be developed to conduct the operation under pressure in case surprise is lost. A Force conducting a withdrawal without enemy pressure will usually leave a detachment left in contact (DLIC). The DLIC is normally composed of approximately one-third of the maneuver units and one-half of the organic maneuver supporting weapons. The mission of the DLIC is to provide security for the withdrawing unit, and to deceive the enemy by simulating normal fires, radio traffic, and other activities. The FA will also leave approximately one-third of their forces to provide fire support to the DLIC. If possible, the units should be of representative calibers to assist with the deception plan.

In a *withdrawal under pressure* a force must fight to disengage. A DLIC is not used in the withdrawal under pressure. Maneuver forces may be divided into two echelons—the main body and a covering force. The covering force should be armor heavy and consist of approximately one-third of the total force.

The FA must provide all possible support to assist maneuver forces in disengaging and to discourage the enemy from pursuing. As appropriate, the FA will displace by echelon. However, timing is critical to insure the maximum number of units can provide support, but at the same time, avoid being overrun. Once disengagement is complete, general support artillery is displaced before

the maneuver units withdraw. DS and reinforcing artillery displaces at the last possible minute. Control of displacement may be delegated to lower echelon artillery commanders to facilitate precise timing and coordination. In the event of failure to disengage, artillery will support limited counterattacks and tank sweeps with all available fires.

Retirement. Retirement is essentially a tactical movement to the rear in the absence of enemy pressure. When combat is threatened, the unit is no longer able to retire and reverts to delay or withdrawal tactics.

Company teams, battalion task forces, and brigades of the division often become involved in multiple or simultaneous delay and withdrawal operations. Fire support must be organized, planned, and coordinated to provide maximum flexibility and versatility of employment. It may often be necessary to support (at various levels with the division) simultaneous withdrawal and delay operations.

☐ **Field Artillery**

Assigned frontages in the retrograde are usually wide, and additional FA is required to provide area coverage. Maneuver forces are usually highly mobile, so FA must be as mobile as the supported force. FA units of varying calibers, representative of the force as a whole, are desirable in order to deceive the enemy.

FA can be organized in several different ways. In a division-controlled covering force, FA can be provided by

- ☐ an FA bde attached or placed in direct support,
- ☐ available organic and nondivisional FA under control of a division artillery forward CP, or
- ☐ an FA battalion group.

If brigades of the division conduct retrograde operations in their own sectors, FA is provided by the brigade's habitual DS battalion and as much reinforcing FA as possible. The FA battalion normally DS to the brigade could be placed in direct support

of a battalion task force conducting a delay or withdrawal for the brigade.

When command and control is hampered by distance or terrain, FA may be attached to maneuver units conducting retrograde operations.

☐ **Close Air Support**

Close air support is especially useful in retrograde operations; however, additional TAC air may be required to drive off enemy air. Tasks assigned to CAS assets include

- ☐ support of the deception plan,
- ☐ harassing and interdiction,
- ☐ interdiction of reinforcement routes,
- ☐ close support of units of contact,
- ☐ planning fires to facilitate disengagement if necessary, and
- ☐ covering obstacles and barriers.

☐ **Fire Support for Delaying Operations**

Fire support must be organized to provide effective support to maneuver units yet retain mass fire capability at division level. FA and CAS are primary fire support means. Fires must be provided continuously as forces move to the rear. FA units echelon in depth and displace by echelon. Fire support planning and coordination is similar to that conducted for delaying operations in the defense. Fire support tasks include the following:

- ☐ Attack advancing forces as deep and as early as possible to force deployment.
- ☐ Delay and degrade the effectiveness of tanks.
- ☐ Cover obstacles, barriers, gaps, and flanks.
- ☐ Suppress/destroy forces in overwatch positions.
- ☐ Suppress direct fire gunners.
- ☐ Facilitate disengagement.
- ☐ Support counterattacks.
- ☐ Provide counterfire.
- ☐ Suppress enemy air defense (SEAD).
- ☐ Illuminate the battlefield.

☐ **Fire Support for Withdrawal Without Enemy Pressure**

FA and mortars of representative calibers remain in place to cover the withdrawal. If practical, the normal pattern of fires is maintained to enhance deception and cover the noise of displacing vehicles. Detailed fire plans are prepared to deceive the enemy and frustrate his attempts to interfere with withdrawal. Close coordination is required between fire support elements remaining with units in contact and those withdrawing. Fire support tasks include the following:

- ☐ attacking breakthrough concentrations,
- ☐ destroying concentrations at chokepoints and assembly areas,
- ☐ assisting in disengagement,
- ☐ providing counterfires, and
- ☐ providing SEAD.

☐ **Fire Support for Withdrawal Under Pressure**

Fire support is directed primarily toward assisting in the disengagement and discouraging the enemy from pursuing. Once disengagement is complete, GS field artillery displaces before maneuver units withdraw. DS FA remains in position until the last possible moment. Fire support tasks include the following:

- ☐ Mass fires to assist in disengagement.
- ☐ Support counterattacks.
- ☐ Suppress enemy direct fire weapons.
- ☐ Cover obstacles and barriers.
- ☐ Provide counterfire.

☐ **Fire Support for a Retirement**

In a retirement, adequate fire support is provided for forward, flank, and rear security elements. Air cavalry or attack helicopters may be used to augment ground security forces and provide additional fires when necessary. FA may provide support by attaching elements to security forces or by assignment of appropriate tactical missions.

☐ **Rearward Passage of Lines**

During retrograde operations a force nearly always withdraws or delays through a unit occupying a rearward defensive or covering position. Such an operation requires considerable prearrangement and coordination with the forces manning the rearward positions, both as to movement and fires. Fire plans are prepared and communication channels are established to permit the rear guards of the withdrawing force to receive fire support from the rearward force during the critical phases of the withdrawal.

Liaison and communications are established at each fire support echelon between the FSCoord's of the withdrawing force and the appropriate FSCoord's of the unit in the supporting rearward position. These channels are used to exchange information and plans and to transmit requests for fire. The FSCoord's of the withdrawing force will normally effect communications with the FSCoord's supporting the main defensive position by using the latter's command/fire direction net (FM). FO's with the withdrawing force may be directed to transmit requests for fire directly to an FDC of an FA battalion supporting the main defensive position.

As the rear security elements of a retrograding force withdraw to within range of indirect fire units of the rearward force, the fires of these weapons are brought to bear on the enemy to augment the fires available to the withdrawing force.

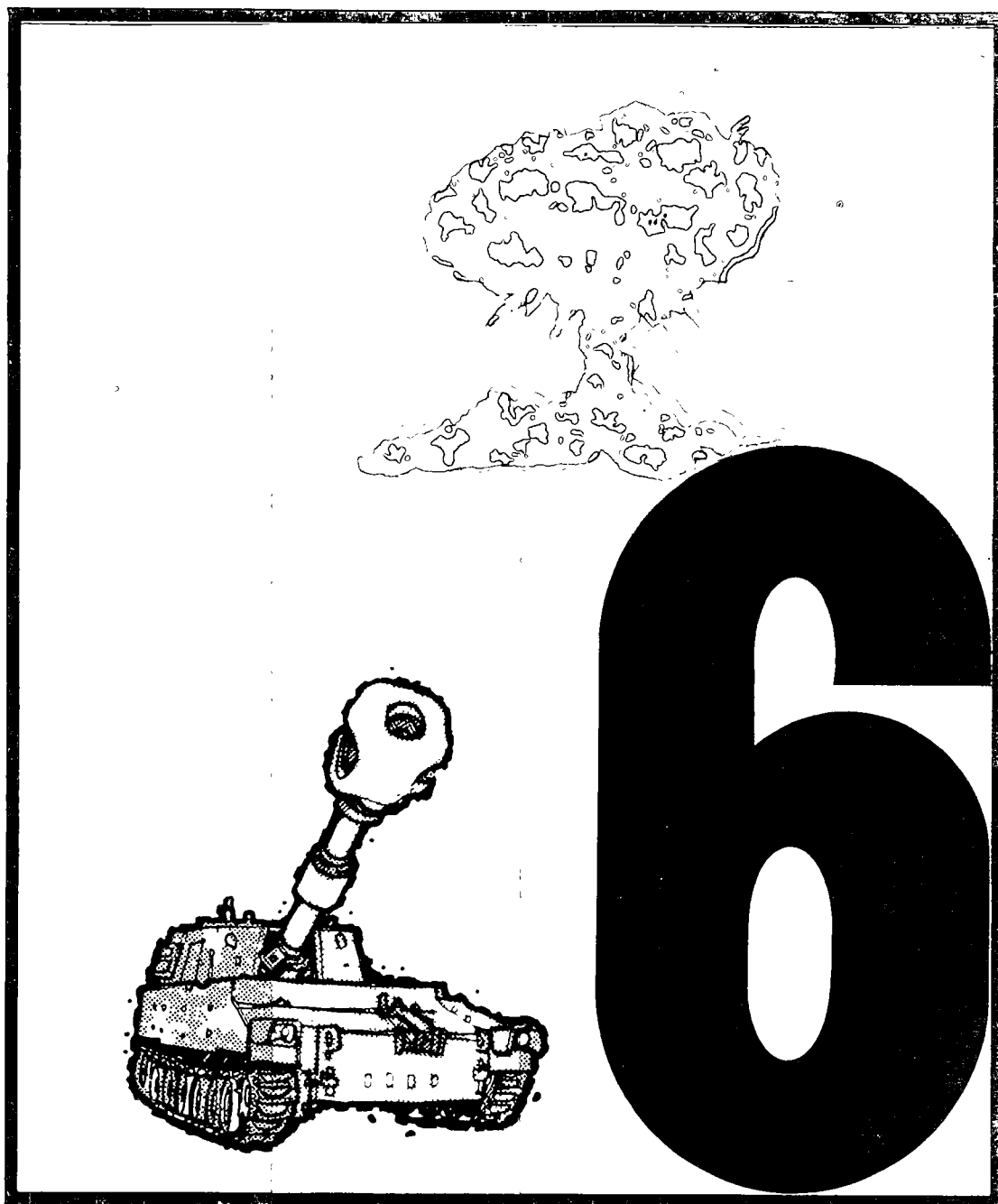
The movement of fire support columns through a rearward position is scheduled and coordinated by the supported maneuver force.

The responsibility for fire support coordination within the zone remains with the FSCoord of the withdrawing force until control of the sector passes from the withdrawing force to the commander of the force defending in that sector.

5-15. Summary

The concepts and fundamentals for various defensive operations and how fire support is integrated into the operations has been discussed. The key to winning the defense is to maximize the effects of all fire

power available with maneuver operations and fight the defense with an offensive spirit. If the commander cannot successfully defend with conventional fire and maneuver, he may be forced into using more powerful weapons. This is the subject of the next chapter—nuclear and chemical operations.



Nuclear & Chemical Fire Support

The blow, wherever struck, must, to be successful, be sudden and heavy.

— General Robert E. Lee

WHY

□ Nuclear and chemical weapons can quickly and decisively alter combat force ratios to change the course of battle. Knowing what these weapons will do and how they are planned, coordinated, and integrated with maneuver and conventional fire support is essential.

WHAT

- This chapter tells you:
 - why and when nuclear and chemical weapons are employed on the battlefield;
 - who makes the decision to employ them;
 - what the weapons do for the commander;
 - who plans and coordinates their employment;
 - how the weapons are employed.

The planning and coordination required for nuclear and chemical employment use the same basic fire support principles as conventional fires. However, national authority limits the number of weapons as well as when and where they will be fired. This situation places significant demands on the commander and his FSCoord. The pace of battle and the tactical situation that will exist when nuclear or chemical fires are requested will be demanding and difficult.

This chapter addresses how the commander and his staff logically plan for and integrate nuclear, chemical, and conventional weapons into the scheme of battle.

6-1. Introduction to Nuclear Weapons Employment

□ Tactical Nuclear Doctrine

US Army tactical nuclear doctrine describes the methodology for employment of nuclear weapons on the battlefield and for conducting operations in a conventional nuclear conflict. For the purposes of this chapter, tactical employment means the use of nuclear weapons by the battlefield commander—usually at corps or below—in support of maneuver forces in his command.

Because nuclear weapons represent combat power of tremendous magnitude, the initial use of nuclear weapons will result in a significant change in the nature of any conflict. While tactical nuclear planning by the corps will usually be oriented toward the achievement of tactical goals, any employment of nuclear weapons will have a

fundamentally political aspect of which planners at all echelons must be aware. Whether nuclear weapons should be employed during a given conflict and how much their use should be constrained are strategic decisions that high level political/military authorities will make.

The Army's tactical nuclear doctrine specifies the manner in which corps and divisions will conduct nuclear operations within political and military constraints. Such constraints may include geographical or political boundaries, yield limitations, time, number of weapons to be used, collateral damage preclusion guidance, and restrictions on using specific delivery systems or attacking specific types of targets.

☐ **Nuclear Weapons Employment Planning**

The corps nuclear weapons "package" is a basic planning and control element of US Army tactical nuclear doctrine. A package is a *discrete grouping* of nuclear weapons for employment in a *specified area* during a *short time period* to support a corps tactical mission. Packages should be planned prior to hostilities and refined during hostilities to obtain the best tactical effect. Aimpoints are planned outside civilian population centers in areas that we feel the enemy *must use* to accomplish his mission. To convey that nuclear weapons are being employed in a *limited* manner, all weapons in a package are fired in the shortest possible time. Division subpackages are subelements of a corps package and will be executed as part of a corps package. A single package or several packages may comprise all or part of a more widespread theater or strategic employment plan.

Nuclear packages are planned using a combination of two nuclear target analysis techniques: *preclusion-oriented analysis* and *target-oriented analysis*. Preclusion-oriented analysis seeks to avoid excessive damage to population and facilities while employing

yields that will maximize the effect on probable enemy locations within the remaining areas. Probable enemy locations are identified by considering the terrain, enemy doctrine, and friendly operations. As more intelligence becomes available, aimpoints are *refined* to obtain the best tactical effect. Target-oriented analysis requires a known target location, size, and composition. Using this technique, weapon yields can be selected to achieve specific target coverage within employment constraints.

Nuclear fire planning is a continuous process and is an integral part of all operations unless the commander specifically deletes the requirement. The objective in employing nuclear weapons is to *decisively alter* the tactical situation. Nuclear weapons employment may be necessary:

- ☐ Offensively, to destroy enemy forces or regain lost territory.
- ☐ Defensively, when the mission cannot be accomplished without them.
- ☐ In response to enemy first use.

Nuclear weapons alone will probably not be decisive on the battlefield despite their lethality. Conventional firepower and maneuver must be integrated with nuclear firepower to achieve decisive results. For example, threat forces may use "hugging" tactics that put their units in close proximity to towns where they believe we are unlikely to use nuclear weapons. Conventional fires—executed in conjunction with nuclear fires—must be planned in such areas.

Offensive use of nuclear weapons can be anticipated to destroy enemy forces or to allow the corps commander to take the offense and regain lost territory.

In the defense, we may attack first and second echelon committed divisions and their fire support systems. The enemy tactic of echelonment can be defeated by destroying followup forces for the breakthrough and by weakening support. Commanders must be prepared to take advantage of nuclear effects with aggressive maneuver and coordinated conventional fires.

Applications for the use of nuclear weapons in the offense and defense are shown below:

NUCLEAR APPLICATION FOR THE OFFENSE AND DEFENSE

OFFENSE

- Attack defensive positions.
- Attack fire support systems.
- Attack command, control, and supply installations.
- Prevent reinforcement of the defense.
- Counter counterattacks.
- Protect the flanks.
- Isolate selected terrain.

DEFENSE

- Attack committed frontline and breakthrough forces.
- Seal penetrations.
- Attack reserves.
- Attack second echelon forces.
- Counter counterattacks.
- Attack fire support systems.
- Deny enemy access to critical terrain or avenues of approach.
- Attack command and control and prestocked supplies.

□ The Battlefield Decision—Who

All tactical levels within a theater are involved in nuclear fire planning. Corps is the focal point for planning the battlefield use of nuclear weapons and originating requests for authority to employ nuclear weapons. The corps commander may request nuclear release when he concludes that:

- the corps cannot accomplish its mission if nuclear weapons are not used.
 - if the corps accomplishes its mission without nuclear weapons, it would be too weak to continue conventional operations.
- The corps commander must use all available indicators so that he requests nuclear release *before* his forces have been so weakened that they cannot continue operations conventionally *after* nuclear weapons are fired.

The corps FSCoord/corps artillery commander is the corps commander's principal nuclear adviser and is responsible for planning and coordinating the corps nuclear package. To do this he follows closely the flow of the conventional battle so that the

need to employ nuclear weapons is recognized as early as possible. He carefully monitors the attrition of cannon delivery means and continually updates the corps commander on the status of those and other fire support assets. Execution of a corps package must occur before delivery means become too severely depleted.

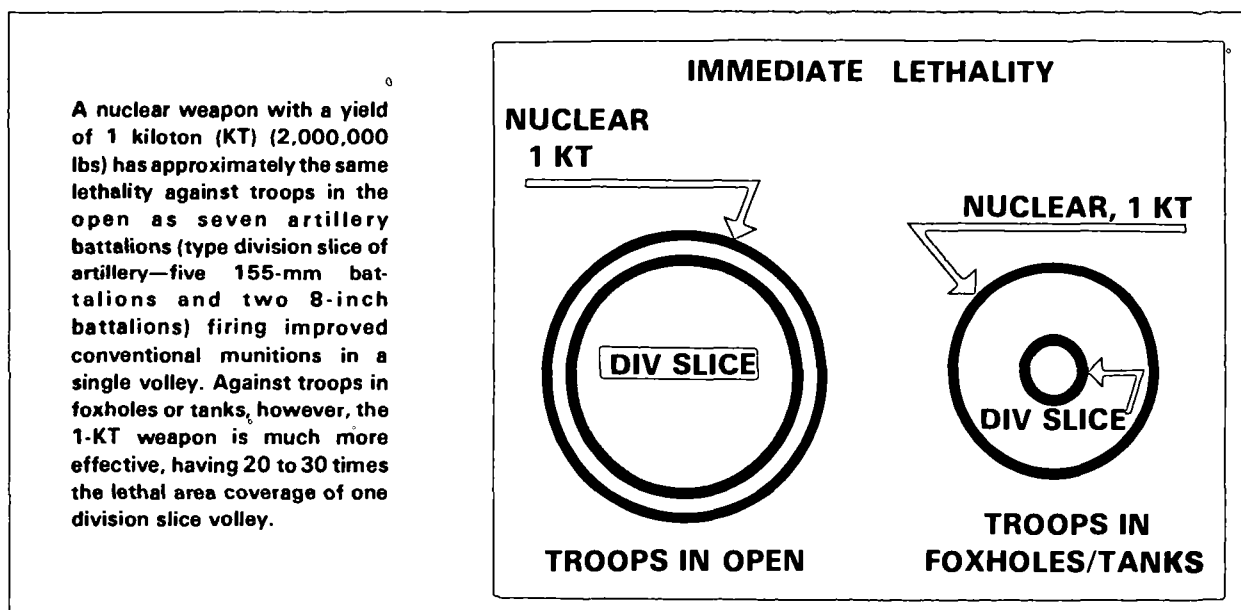
□ Controls on Nuclear Release

Release, or the authority to use nuclear weapons, will be conveyed from the National Command Authority (NCA). National command authorities are The President and The Secretary of Defense. To dampen the escalatory effects of using nuclear weapons, release will normally be approved for *preplanned packages* of weapons to be fired within a *specified time frame*, and within *specified geographical areas*. To convey to the enemy that we are using nuclear weapons in a limited manner, all weapons in a package will be fired in the *shortest possible timespan*. Approval to employ nuclear weapons is granted after consideration of the predicted military effect, the strategic impact, and the overall political objectives.

6-2. What Nuclear Weapons Can Do

□ Nuclear Weapons Effects

Nuclear detonation effects present significantly increased destructiveness on the battlefield when compared to conventional firepower. A comparison of a 1-KT nuclear weapon to a typical division slice of field artillery is shown below.

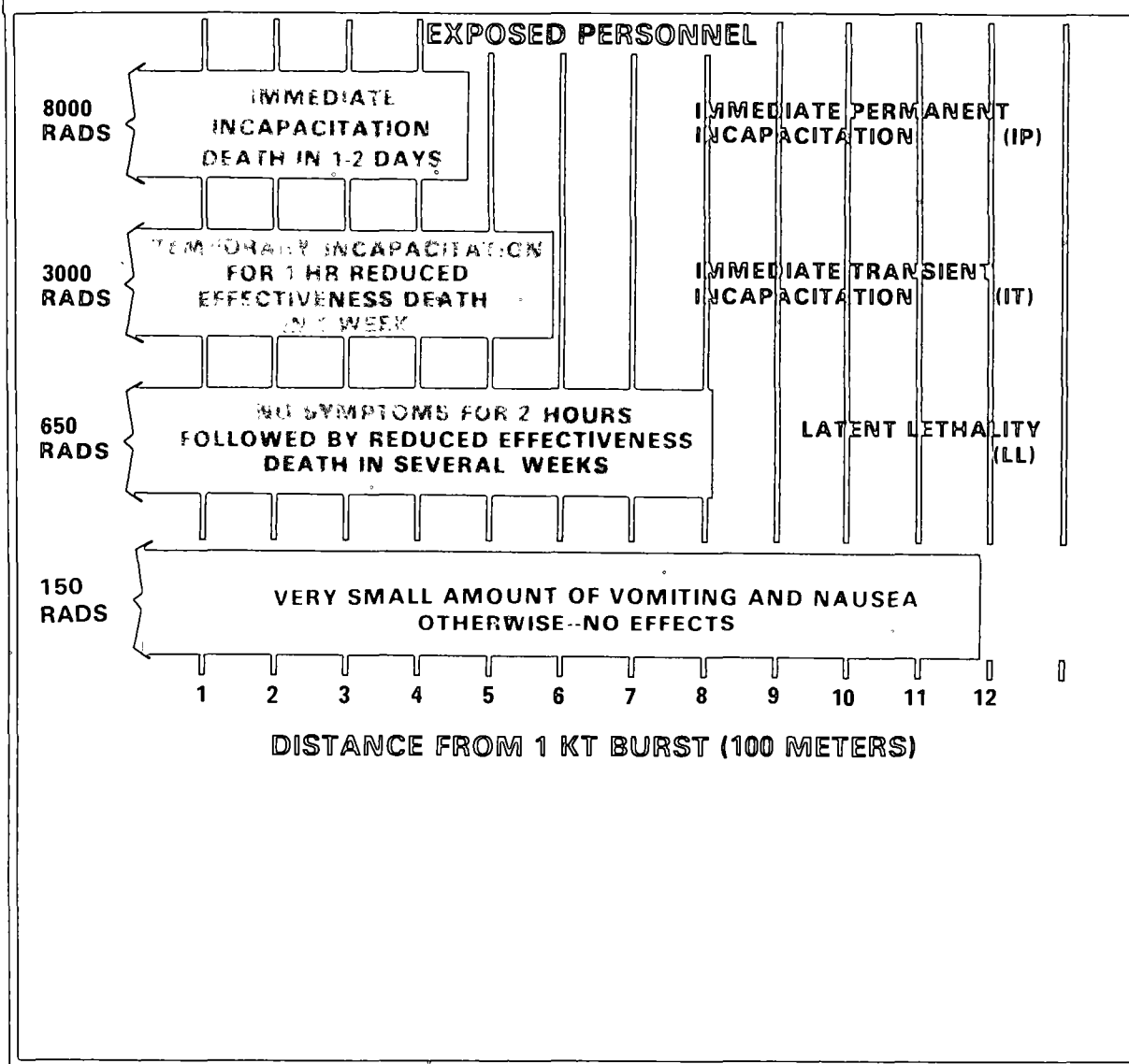


There are several distinct nuclear weapons effects. *Blast* effect is vastly increased over conventional weapons. Both initial and residual *radiation* have a significant effect on troops. *Thermal* output is an added danger to unprotected soldiers. *Flash* can cause temporary or permanent blindness. The *electromagnetic pulse* that emanates from a nuclear burst can seriously impair command and control communications. Most casualties and damage on the nuclear battlefield are caused by some combination of these effects rather than a single one.

Blast. For a "typical" nuclear weapon approximately 50 percent of its yield is produced as a blast when detonated at a low burst height. Materiel targets are damaged either by the crushing action or by the tumbling, tearing action of the blast wave. In addition, trees may be blown down and debris scattered about the battlefield creating obstacles to movement. Personnel may become casualties from high speed winds.

Initial Nuclear Radiation. This radiation, which is emitted from the detonation during the first minute, is highly penetrating and may produce a lethal hazard several hundred meters from the nuclear burst. This type radiation is normally measured in terms of the "radiation absorbed dose" or "rad." Biological response in the average person due to various radiation doses is shown in figure 6-1.

FIGURE 6-1. BIOLOGICAL RESPONSE TO RADIATION.



Residual Nuclear Radiation. This radiation consists of induced radiation and fallout. Induced radiation is caused by the initial neutron radiation interacting with the soil. It occurs in a relatively small circular area directly below the nuclear detonation. Casualties can normally be avoided by restricting operations within a radius of 1 kilometer of a detonation until radiological survey teams have determined the actual radius of significant hazard. A surface or subsurface burst vaporizes large quantities of soil and forces it into the atmosphere. When sufficient cooling has occurred, "fallout" particles are distributed by the prevailing wind as they return to the ground. Because fallout contamination may cover large areas and present major operations problems, deliberate use of surface bursts are tightly controlled by higher authority.

Thermal Radiation. Thermal energy (heat and light) may travel in sufficient intensity to burn troops, and start fires at considerable distances from the point of detonation. Terrain, vegetation, buildings, fog, haze, and smoke will reduce the range of such effects.

The brilliant flash of a nuclear burst can cause "dazzle" (temporary blindness) or permanent retinal burns at ranges (up to 50 km at night) where all other casualty producing effects are insignificant. All damage is done before the 0.15 second normally required to blink an eye. Facing away from the burst or closing the eyes will not always eliminate dazzle.

Electromagnetic Pulse (EMP). Electrical and electronic equipment including radios, generators, night vision devices, and computers may be damaged or temporarily disrupted from the EMP emitted by a detonation.

☐ **Survival on the Nuclear Battlefield**

Despite their tremendous lethality, nuclear weapons may not be completely decisive against ground targets. Damage will be

lessened by target location error, weapons system limitations, and defensive countermeasures. Three important countermeasures are shielding, dispersion, and EMP countermeasures.

Shielding. Shielding is physical protection that reduces the vulnerability of personnel and materiel to nuclear weapons effects. Any form of shelter that increases protection against small arms, mortars, or conventional artillery fires will normally increase the protection against the effects of a nuclear weapon. Terrain itself can provide protection.

Dispersion. Dispersion is the separating of units to reduce their vulnerability to nuclear attack. Well-dispersed units are less vulnerable because of the increased distance between elements of the unit. In addition, a well-dispersed unit is more difficult to detect. The extent of dispersion is a function of the mission, local security available, the enemy's target acquisition capabilities, and the likelihood of nuclear strikes.

Electromagnetic Pulse (EMP) Countermeasures. Protective measures can be taken that will reduce the probability of EMP damage to a piece of equipment. These include using larger antennas only when absolutely necessary, reduced remoting of radios, removal of antennas and cables when radios are nonoperational, and storage of nonoperational radios inside "buttoned-up" armored vehicles. Reducing EMP vulnerability also reduces the unit profile in electronic warfare (EW) operations.

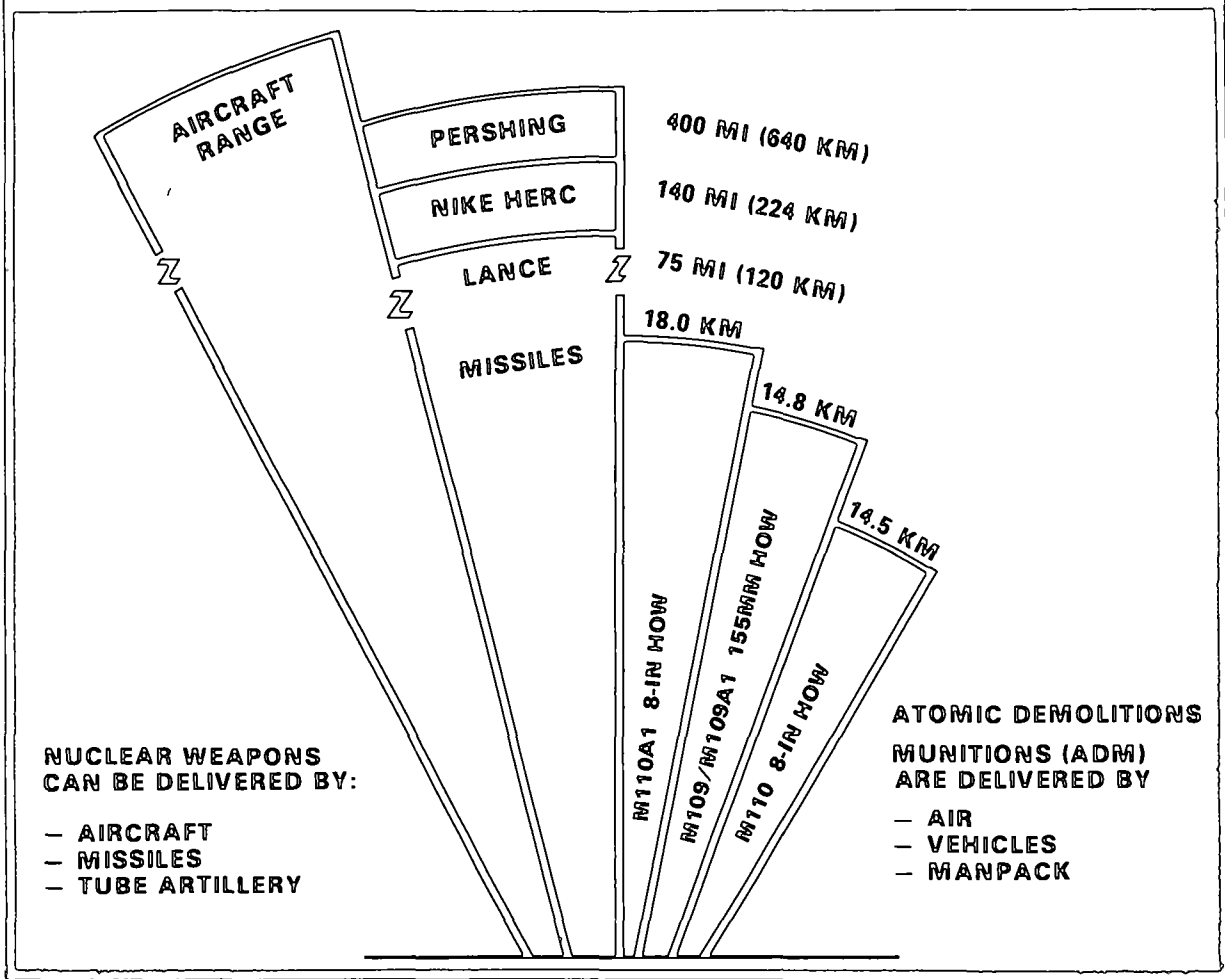
☐ **Nuclear Delivery Systems**

Nuclear weapons can be delivered by a variety of tactical delivery systems. Cannons are relatively accurate, and permit a higher degree of flexibility because of the low yields available and short response times. They are most useful in support of forces in contact and where it is important to minimize collateral damage and insure troop safety. Cannons are more survivable because of large numbers

and wide dispersion. Missile systems are characterized by longer ranges, larger payload, and slower response. Air delivered weapons are characterized by very long ranges, maneuverability, and reduced effectiveness in bad weather. Atomic

demolition munitions (ADM) can be useful for obstacle production; however, the need to bury them to optimize this effect is a disadvantage. Figure 6-2 shows nuclear-capable systems and representative ranges.

FIGURE 6-2. US TACTICAL NUCLEAR DELIVERY SYSTEMS.



□ Opposing Force Nuclear Doctrine

Warsaw Pact forces' nuclear doctrine includes the following factors:

- The decision to fire is made at the highest political levels. A decision to retaliate against first use by an opposing force *may* be made by the theater commander.

- Surprise and massed nuclear fires in depth are stressed.

□ Weapons with much larger yields than those employed by the US are used. They will normally be employed in airbursts.

- Units may be withdrawn to allow close support strikes. *This would be a good intelligence indicator for US forces.*

□ Nuclear weapons are integrated with and supplement conventional and chemical fires to achieve surprise massed fire support.

□ Opposing force nuclear delivery means are the first priority targets.

Forces we could fight in the Far East consider the following factors:

□ Planning and decisionmaking are done at the General Staff Department in consultation with Army and higher headquarters.

□ Employment will be in response to the first use of nuclear weapons by an opposing force.

□ Strategic missiles and bombs may be used to support ground forces. ADM's may also be used.

□ Opposing force nuclear delivery means are the first priority targets.

6-3. Nuclear Weapons Packages and Subpackages

□ The Nuclear Weapons Package

A nuclear weapons package is the basic element of prehostility planning for nuclear battlefield support. A package is a *discrete grouping of nuclear weapons for employment in a specified area during a short time period to support a corps tactical mission*. A package is characterized and defined by four parameters:

□ A specified *number* of nuclear weapons, listed by yield or by yield and delivery systems.

□ The purpose for which the package would be employed.

□ A time for employment.

□ An area for employment.

A package is given a "name" to identify and refer to a specific set of parameters. That package will then be treated as a single entity for the purpose of request and release. "Release" as it pertains to corps and lower echelons, is *"approval to employ a specific package of nuclear weapons subject to specific employment constraints."*

Number. The number of weapons in a corps package will depend upon the threat, the mission, the terrain, and constraints imposed by higher echelons. A corps package should contain enough weapons to achieve a desired objective. At corps, the objective in employing a package is usually to change the tactical situation decisively. Weapons are specified by a total number, listed by yield or by yield and delivery system. The total number of weapons is an *upper limit*. The corps commander may use fewer weapons and adjust yields within constraints if the tactical situation permits.

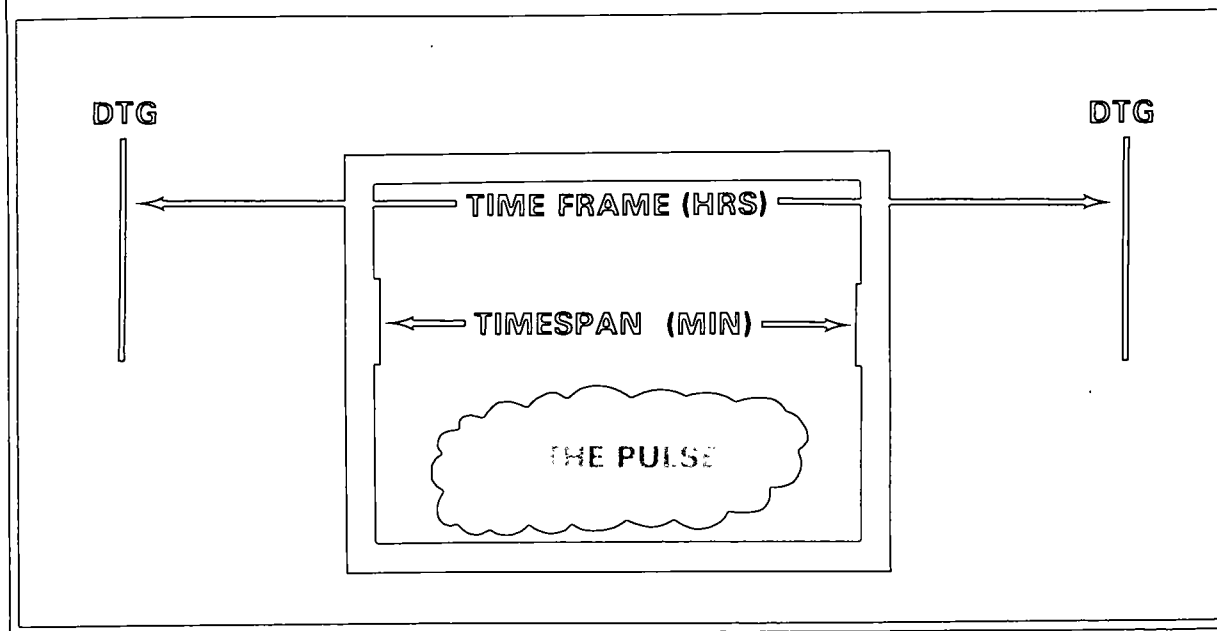
Time. To provide the control required by the National Command Authority (NCA) and the flexibility needed at the tactical level, the time parameter is composed of two times:

□ a fixed period of time expressed in hours—*time frame*.

□ a moveable period of time expressed in minutes—*timespan*.

A time frame is the time during which the corps anticipates employing nuclear weapons or the NCA has approved their use. The time frame is requested by the corps and approved or modified by the NCA. The corps requests a time frame to cover the uncertainties in intelligence and in predicting the exact time that the best tactical advantage can be gained by employment of the package. The time frame will be established by the NCA based on their estimation of changes in the strategic environment of the conflict. The time frame may be several hours in length and will be defined by a specific date-time group (DTG) (fig 6-3).

FIGURE 6-3. TIME FRAME, TIMESPAN, AND PULSE.



Within the time frame the package will be employed with a shorter timespan, which is expressed in minutes. The employment of a package during the timespan is referred to as a nuclear "pulse." The length of the timespan will depend on the length of the nuclear schedule of fires; the capability of delivery units to execute the package; the operational necessity for command, control, warning, and tactical flexibility; and *national approval*. The timespan will be limited to promote a clear perception by the enemy of an employment that was voluntarily constrained rather than limited because of his conventional, nuclear, or chemical response. After the NCA has approved a package for employment, corps will determine the best time within the approved time frame to "begin the timespan."

Area. The area that is defined for a corps package must bound all the tactical

contingencies for which that package was planned. Generally, that area will extend from just behind an assumed line of contact to the range of delivery systems available to the corps and will extend all across the corps front. Constraints, however, may preclude employment in certain areas such as across political boundaries. If subsequent packages are planned in depth, the package areas will usually overlap.

Employment Constraints. In addition to the package parameters, employment constraints must always be specified for a package. As a minimum, *collateral damage preclusion criteria* are employment constraints that must always be identified. Collateral damage is defined as casualties among civilian personnel or damage to their facilities.

An example of a corps package is shown below.

THE CORPS NUCLEAR WEAPONS PACKAGE

PACKAGE "PINE"

Purpose: To prevent enemy breakthrough in corps area by * divisions.

Number: Total not to exceed * nuclear weapons consisting of:

- a) None larger than (yield)
- b) * 9-80 (10 KT)**
- c) * 8-59 (5 KT)
- d) * 6-38 (2 KT)
- e) * 5-24 (1 KT)
- f) * 3-12 (0.5 KT)
- g) * 2-11 (0.1 KT)

Numbers and yields of weapons may be adjusted to provide maximum effectiveness within constraints established by higher authorities (unless prohibited).

Time: Time frame: (To be specified in request)
Timespan: * minutes

Area: HB0197 to HD8060 to HA2550 to HB0105

**Hypothetical yields.

EMPLOYMENT CONSTRAINTS

Preclude 5% personnel casualties requiring hospitalization and 5% incidence of moderate damage to buildings in communities over * (99% assurance).

*Actual numbers (weapons, minutes, population) are situational.

NUCLEAR WEAPONS "SHORTNAMES"

New shortnames identify nuclear weapons by effects rather than yield to give commanders and staffs a better feel for nuclear weapons capabilities. A shortname consists of two numbers separated by a dash. The first number is the radius of damage in hundreds of meters for immediate transient incapacitation to personnel in tanks. The second number is the distance in hundreds of meters beyond which there is negligible risk to unwarned, exposed personnel.

6-4. Nuclear Fire Planning

☐ Introduction

Planning for the use of nuclear weapons on the battlefield is similar to conventional fireplanning in that

- ☐ it requires meticulous and comprehensive planning oriented toward likely tactical contingencies; and
- ☐ it requires flexible and responsive execution.

Nuclear fire planning is based on planning

guidance, the terrain, the situation, enemy and friendly capabilities, and assumptions about the most probable courses of events. Nuclear fire planning is *continuous* and is done *along with* conventional fire planning in the corps and division FSE's. This section outlines the *prehostility* fire planning process in general terms. For detailed nuclear fire planning techniques, see appendix I.

□ The Subpackage

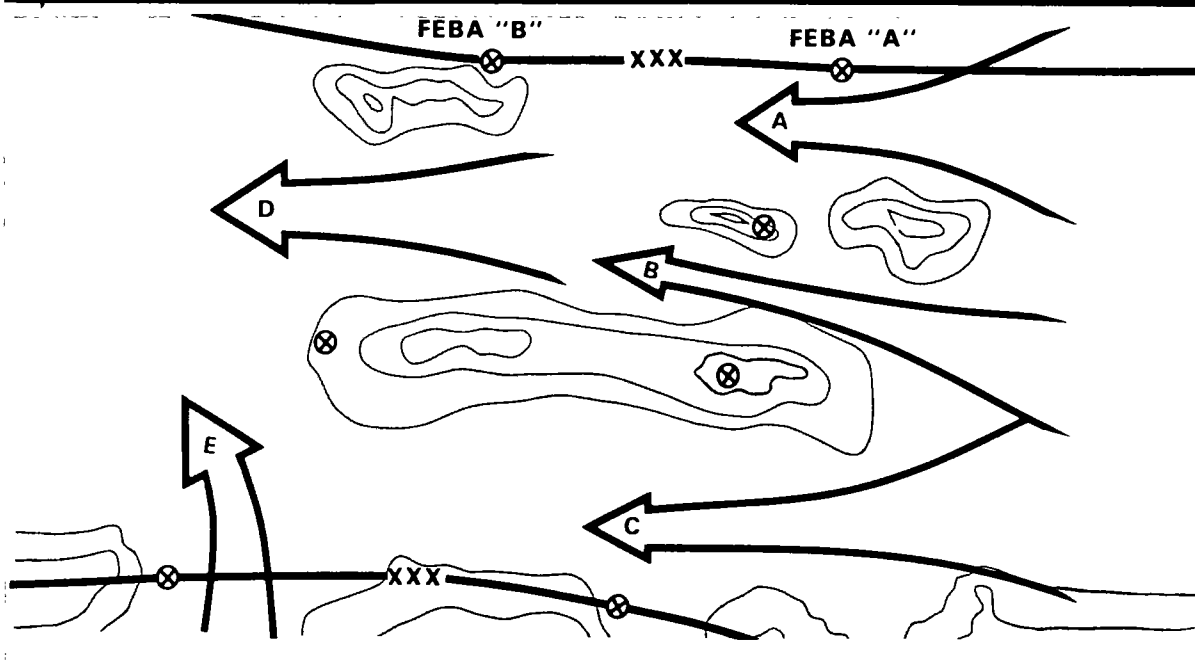
A subpackage is a plan for employment of a portion of a corps package within a division area in support of a single corps contingency. *Subpackages will be employed only as a part of a corps package.* Normally, subpackages will be planned and employed only by division; however, a separate brigade or an armored cavalry regiment in the corps may also have subpackages. Each division will plan a subpackage for each corps contingency that they have been directed to support.

□ The Package Planning Process—An Overview

A nuclear weapons package contains the total number of nuclear weapons required to support any one of several anticipated tactical contingencies. The planning process begins when the corps commander identifies these contingencies in his planning guidance. Figure 6-4 shows a situation in which five contingencies have been identified.

Divisions plan subpackages for each

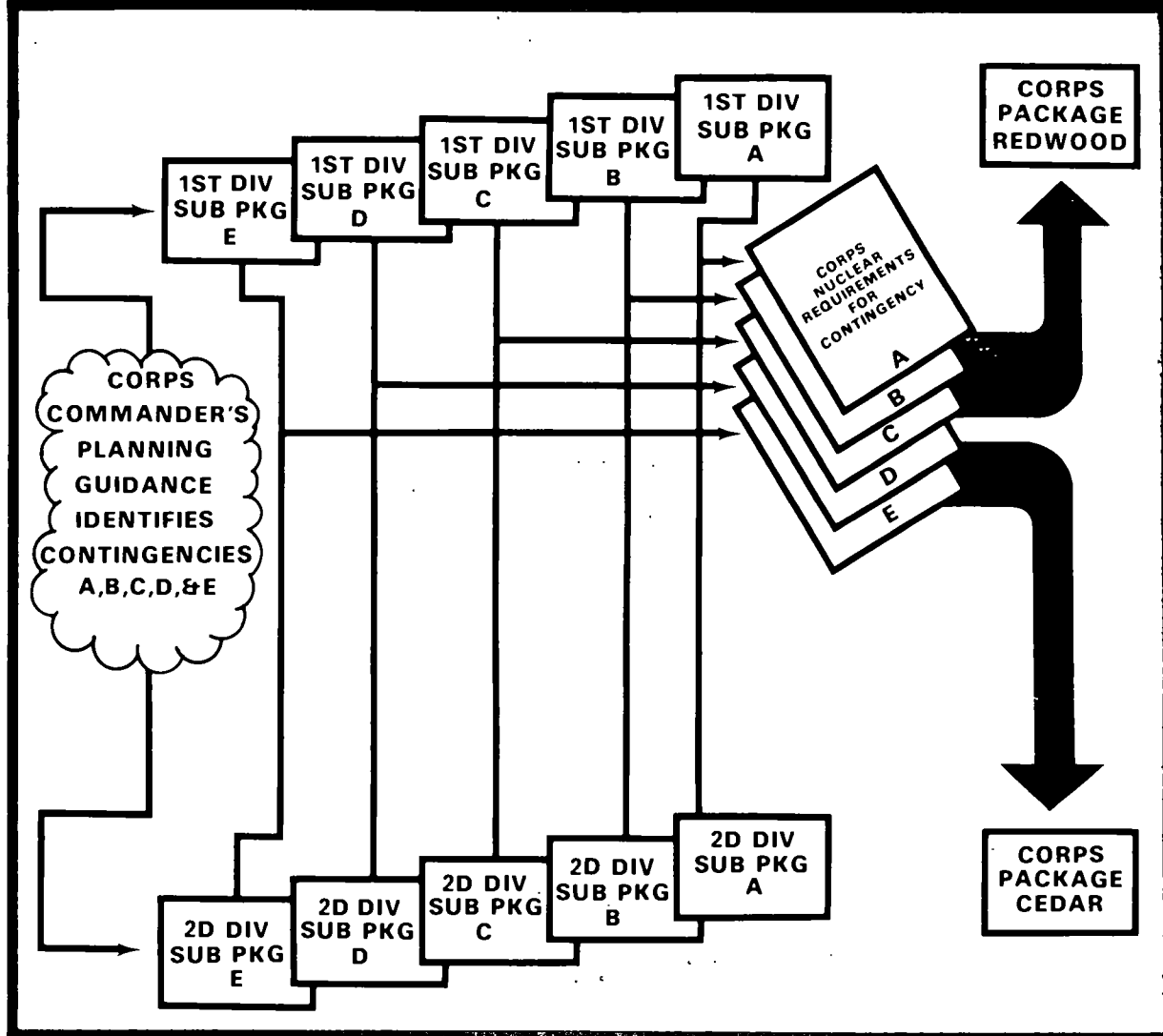
FIGURE 6-4. TACTICAL CONTINGENCIES.



tactical contingency and forward their plans to corps. Corps integrates subpackages into nuclear weapons requirements for each contingency. These requirements are then resolved into the fewest number of distinctly different packages. Normally, all

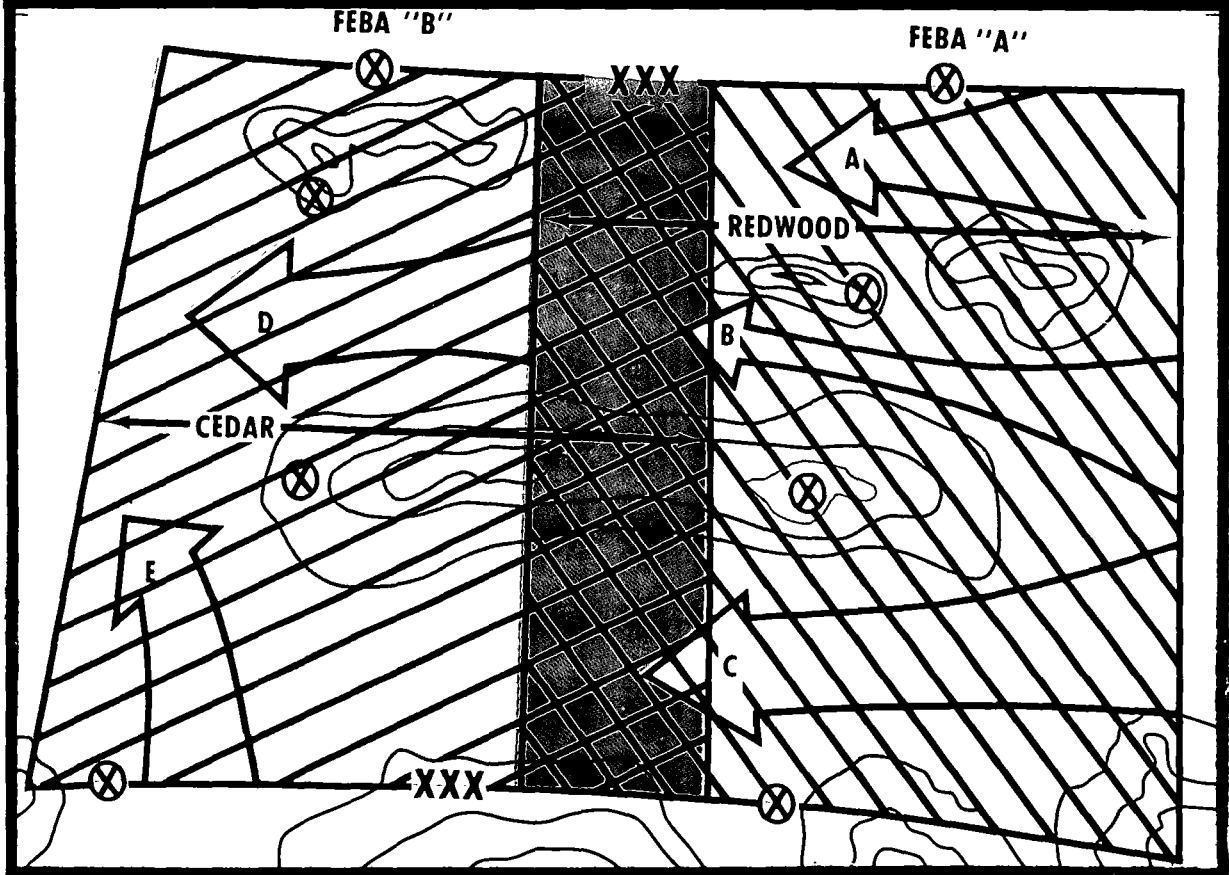
contingencies that occur at the same general depth in the corps area will be included in a single corps package that will support any one contingency in that package. The planning process is shown schematically in figure 6-5.

FIGURE 6-5. THE PACKAGE PLANNING PROCESS.



Two nuclear weapons packages result—package REDWOOD and package CEDAR. These are shown in figure 6-6.

FIGURE 6-6. PACKAGES REDWOOD AND CEDAR.



☐ Nuclear Planning Guidance

The planning process begins when the corps commander provides *nuclear planning guidance* to his major subordinate commands. Portions of this guidance may be set forth in SOP's. The corps commander's guidance must:

- ☐ *Identify* the various tactical contingencies that might require the use of nuclear weapons.
- ☐ *Specify* the tactical circumstances under which a request for nuclear weapons will be initiated.
- ☐ *Specify* the defeat criteria for the threat

force. Specific coverages and casualty or damage levels are normally set forth in the corps SOP. For example, achieve 30 percent immediate transient incapacitation (ITI) to personnel in tanks over no less than 40 percent of enemy maneuver units.

- ☐ *Identify* delivery systems and yields available to be employed in the corps area to include air delivered weapons. Corps will also establish a nuclear weapons reserve from those weapons allocated for planning.
- ☐ *Specify* troop safety criteria.
- ☐ *Specify* changes from the corps SOP.
- ☐ *Direct* divisions to plan a subpackage for each tactical contingency identified.

Collateral damage preclusion guidance will be established to insure that total numbers of civilian casualties and nonmilitary damage is consistent with objectives. Corps SOP will specify the collateral damage preclusion constraints in terms of precluding certain levels of weapon effects in specified areas, usually communities of a certain size or larger.

Constraints may address preclusion of both personnel casualties and damage to structures, for example: "Preclude 5 percent incidence of casualties requiring hospitalization and 5 percent incidence of moderate damage to structures with a 99 percent assurance in areas of * population or more." Corps may be required by higher echelons to estimate the total amount of collateral damage that would be caused by employment of a package.

If a requirement for a collateral damage prediction exists, it should be explicitly stated in planning guidance, plans, and orders. The collateral damage preclusion criteria used in planning a package should be included with the other identifying package parameters of total weapons, time, and area.

□ Divisions Plan Subpackages

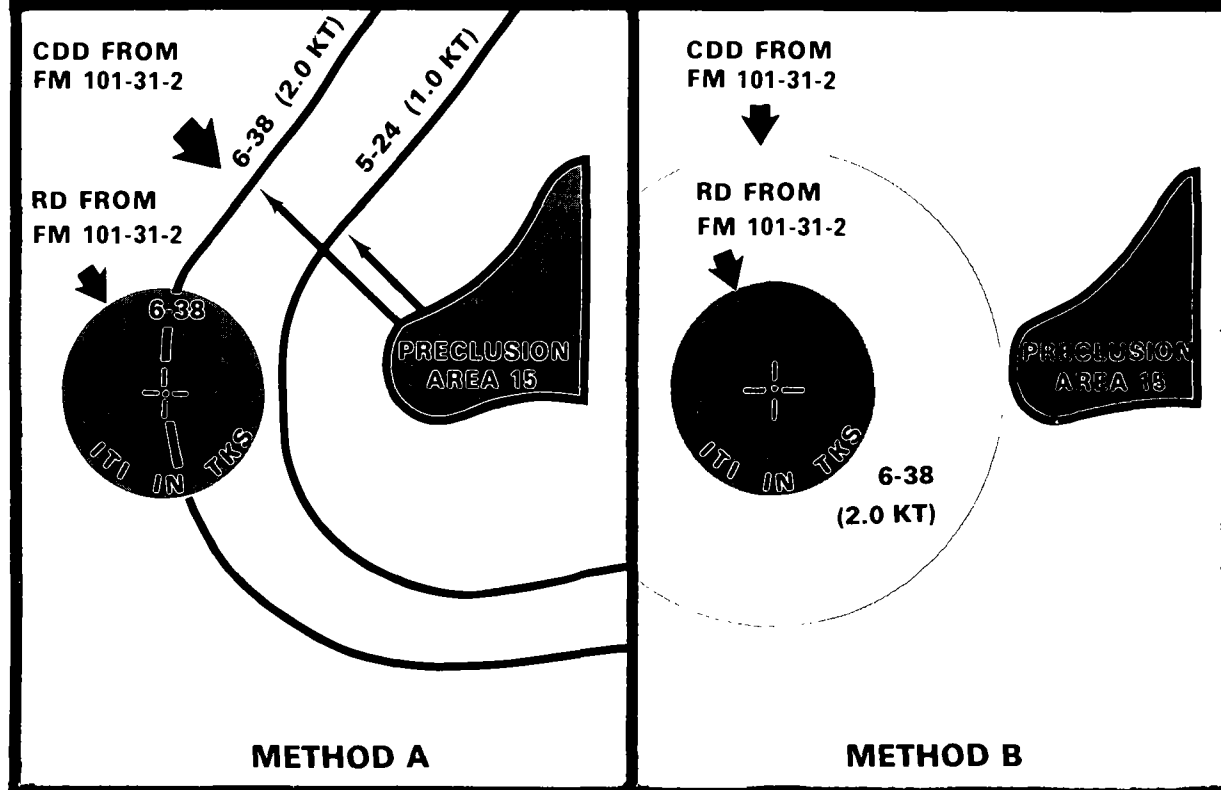
Subpackages are planned in the division fire support element (FSE) with the assistance of other staff sections. The staff determines weapons requirements and aimpoints using the following "tools." The G5 provides a *preclusion overlay*. This overlay identifies the areas where nuclear weapons effects must be precluded to comply with the commander's collateral damage preclusion requirements. The G2 and G3 provide a *nuclear planning threat overlay* for each

corps contingency. This overlay portrays where the enemy's units are assumed to be at the time nuclear weapons are to be employed. It is based on a detailed analysis of opposing force doctrine, the terrain, and friendly operations. This overlay assists the FSE nuclear fire planner in determining the number and mix of nuclear weapons that will be required.

□ Preclusion-Oriented Analysis

FSE planners use a composite of the preclusion and nuclear planning threat overlays to select initial aimpoints and weapon sizes. There are two methods that can be used to locate aimpoints. In method A, collateral damage distance (CDD) contours are drawn around preclusion areas for each weapons system available. Radius of damage (RD) circles are then located as close as possible to assumed enemy positions without allowing the aimpoint to go inside the CDD contour for the weapon used. Method B may also be used and results in the same aimpoint location.

This method uses weapons templates constructed for each delivery system and yield. The inner circle of a weapons template is the radius of damage and the outer circle is the collateral damage distance. Using these templates, planners locate RD circles as close as possible to assumed enemy locations without allowing CDD circles to enter areas shown on the preclusion overlay. Both methods are shown in figure 6-7. Planners attempt to maximize effects within collateral damage constraints. They then access the adequacy of the subpackages to insure adequate coverage of enemy units and add weapons and aimpoints as necessary.

FIGURE 6-7. PRECLUSION-ORIENTED ANALYSIS METHODOLOGY.

Key factors in preclusion-oriented analysis are that: it is based on precluding collateral damage; weapon and aimpoint selection are based upon enemy doctrine, terrain analysis, and friendly operations; most effective yields are used with collateral damage constraints to obtain maximum coverage of assumed enemy locations; and initial planning is done prior to hostilities.

☐ Corps Plans the Packages.

The division FSE will send an aimpoint list or overlay for each subpackage to the corps FSE. Under the supervision of the Corps FSCORD, the plan for each contingency is supplemented with corps weapons and aimpoints using the same techniques used to plan the division subpackages.

The nuclear weapons requirements for each contingency are then resolved into the

fewest number of distinctly different packages. All contingencies that occur at the same general depth in the corps area are normally included in a single corps package that will support any one contingency in that package. Package depths may vary considerably depending on the terrain, the range of delivery systems available to the corps, and intelligence/target acquisition capabilities. When one of the contingencies is in a distinctly different area, for example to support maneuver forces countering an airborne or airmobile attack well to the rear, a different package is established for that contingency. An *area* and *timespan* are determined that is suitable for all contingencies included within each package. Once developed, corps should forward package plans to higher headquarters for evaluation by military and political authorities.

Reapportioning the Package.

The weapons in the planned package are then apportioned to the subordinate divisions in the operation plan (OPLAN) (fig 6-8). The corps OPLAN will also identify the *purpose*, *area*, *timespan*, and *employment constraints*.

Division OPLAN's will identify the subpackage *weapons*, *purpose*, *area*, *timespan*, and *employment constraints*. Aimpoints lists and overlays will be exchanged between corps and division in the planning process.

FIGURE 6-8. EXAMPLE OF INFORMATION IN A NUCLEAR FIRE SUPPORT PLAN.

APPENDIX OR ANNEX
OF A CORPS OPLAN

SUBPARAGRAPH OF
A DIVISION OPLAN

CONTINGENCY D

CONTINGENCY C

CONTINGENCY B

CONTINGENCY A

DELIVERY SYSTEM	YIELD**	1ST DIV	2D DIV	III CORPS	TOTAL
--------------------	---------	------------	-----------	--------------	-------

155mm/SRC	0.1	24	18	7	49
	0.5	*	*	*	*

8"/MRC	0.5	*	*	*	*
--------	-----	---	---	---	---

	2.0	*	*	*	*
--	-----	---	---	---	---

	5.0	*	*	*	*
--	-----	---	---	---	---

LANCE/LGM	5.0			*	*
-----------	-----	--	--	---	---

	10.0			*	*
--	------	--	--	---	---

ADM	0.5		*		*
-----	-----	--	---	--	---

	1.0	*	*		*
--	-----	---	---	--	---

TAC AIR	2.0			*	*
---------	-----	--	--	---	---

	10.0			*	*
--	------	--	--	---	---

NIKE HERC	1.0			*	*
-----------	-----	--	--	---	---

	10.0			*	*
--	------	--	--	---	---

TOTAL		*	*	*	*
-------	--	---	---	---	---

DIVISION 1

SUBPACKAGE

DELIVERY SYSTEM	YIELD	A	B	C	D
--------------------	-------	---	---	---	---

155mm/SRC	0.1	24	21	14	12
-----------	-----	----	----	----	----

	0.5	*	*	*	*
--	-----	---	---	---	---

8"/MRC	0.5	*	*	*	*
--------	-----	---	---	---	---

	2.0	*	*	*	*
--	-----	---	---	---	---

	5.0	*	*	*	*
--	-----	---	---	---	---

ADM	0.5	—	*	*	—
-----	-----	---	---	---	---

	1.0	*	*	*	*
--	-----	---	---	---	---

TOTAL		*	*	*	*
-------	--	---	---	---	---

Purpose: Halt enemy penetration north of line orange and reconstitute a conventional defense.

Timespan: * minutes

Area: From NB95507010 to NB08553810 to NA37505780 to NA99908640.

Employment constraints: Preclude casualties to civilians in cities over * population and preclude damage to single story masonry buildings in those communities (99% assurance)

*Actual times, numbers, and totals are situational.

**Hypothetical yields.

Purpose: Halt enemy penetration north of line orange in the division zone and reconstitute a conventional defense.

Timespan: * minutes

Area: From NB2510Q260 to NB96403510 to NA37505780 to NA99008640.

Employment constraints: Preclude casualties to civilians in cities over * population and preclude damage to single story masonry buildings in those communities (99% assurance).

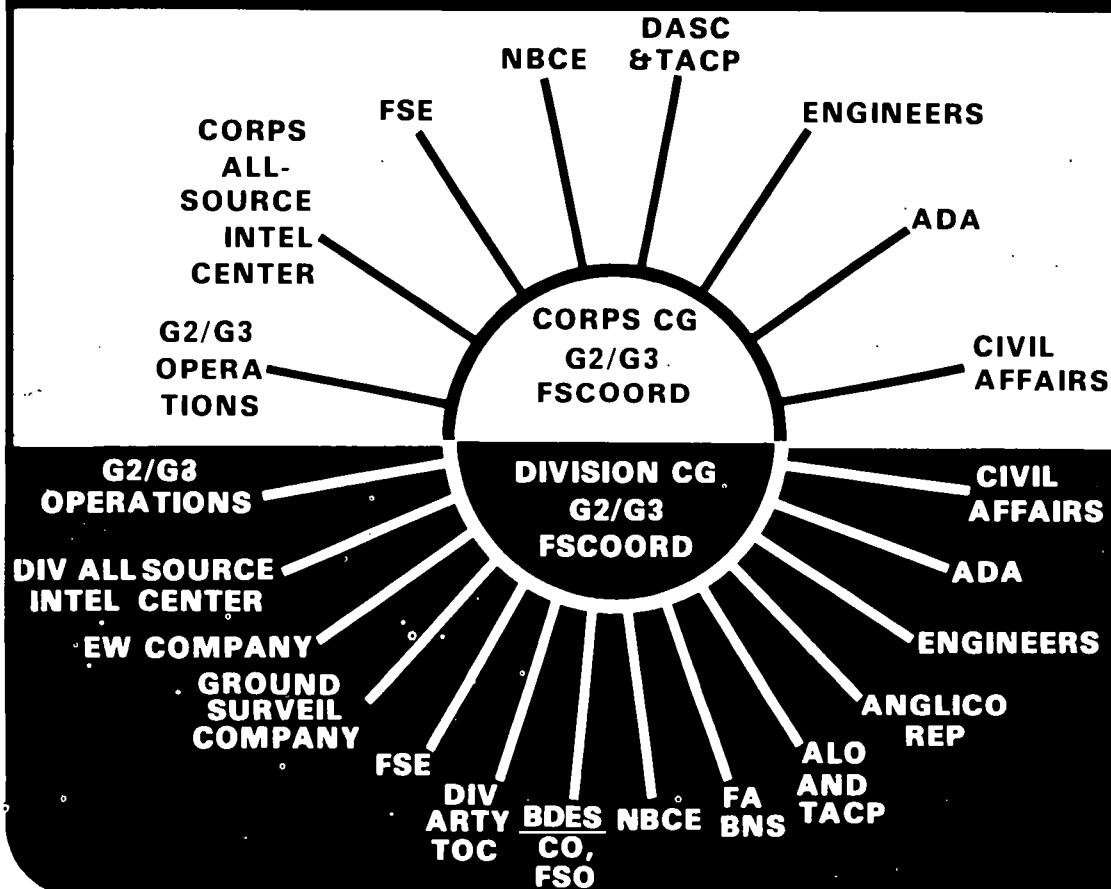
□ The Nuclear Support Plan

Nuclear package planning is the formal planning that results in the corps nuclear support plan. This plan is referenced in paragraph 3 of an OPORD. Once completed, the plan is distributed from corps to the divisions. The nuclear support plan is discussed in appendix I.

□ The Nuclear Planning and Coordinating Team

The commander has numerous staff members to assist him in the planning and coordinating of nuclear fires. The team members are shown in figure 6-9.

FIGURE 6-9. NUCLEAR PLANNING AND COORDINATING TEAM.



At corps and division, the G2, G3, and FSCoord compose the principal advisory and action team.

□ The corps G2, using the corps all source intelligence center, receives information from:

1. Strategic and national intelligence agencies.

Combat Electronics Warfare Intelligence (CEWI) group.

MI, to include aerial surveillance. The direct air support center (DASC).

□ The all source center also provides:

Signal intelligence
Electronic warfare information.

□ The corps and division G3, using the G2's

terrain analysis and the predicted opposing force locations, develops the friendly and enemy situation, coordinates with the FSCOORD, and provides the commander advice on *when* and *where* nuclear weapons should be employed.

□ The corps FSCOORD/corps artillery commander has the key role of managing the nuclear weapons and delivery systems to execute the nuclear package. He monitors their status to include location, associations with subpackages, and losses. Losses of nuclear means are especially important because a nuclear package must be fired before those means become too severely crippled. He also advises the corps commander on the tradeoffs between nuclear and conventional fire support and recommends the weapons and weapon systems to support all tactical contingencies. The division artillery commanders make similar recommendations at the division level.

Other elements of the team provide the details from which the G2, G3, and FSCOORD make their recommendations and the commander makes his decision.

□ The FSE and the nuclear, biological, and chemical element (NBCE) target analysts develop the data to put the most effective

weapons on the most critical terrain and predicted opposing force locations. They apply the commander's criteria—and preclude collateral damage and fallout as prescribed.

They recommend defense against opposing force nuclear attack.

□ The DASC (corps), air liaison officer (ALO) (division), and their tactical air control parties (TACP) provide information and advice on employment of nuclear and chemical weapons by air-delivered means.

□ The ANGLICO representatives at division provides availability and capability information on Navy and Marine air assets.

□ Engineer and air defense artillery (ADA) (Nike Hercules in the surface-to-surface role) representatives advise and plan on the employment of their weapons systems.

□ Civil-military operations personnel provide information on population centers where significant casualties could result from nuclear or chemical employment.

□ The division artillery TOC manages the division counterfire program by merging intelligence and target acquisition data from divisional and outside sources. Accordingly, the TOC is a good source of information to assist the FSCOORD's in their recommendations to the commander.

SUMMARY OF PREHOSTILITY PRECLUSION-ORIENTED PLANNING

WHAT	HOW	WHO
CORPS BEGINS PACKAGE DEVELOPMENT WITH COMMANDER'S GUIDANCE	Identifies □ Tactical contingencies □ Circumstances for employment Specifies □ Defeat criteria for threat □ Collateral damage preclusion □ Available delivery systems □ Troop safety criteria □ Changes to corps SOP	CG, G3
DIVISIONS DEVELOP SUBPACKAGES FOR EACH CONTINGENCY BASED ON	Commander's guidance Scheme of maneuver Weapons available Opposing force doctrine All source intelligence Population centers	CG G3 G2 G5
CORPS CONSOLIDATES SUBPACKAGES BY	Adding aimpoints as necessary Resolving requirements for each contingency	FSCoord
CORPS DEVELOPS PACKAGE(s) IN DEPTH BY	Integrating requirements into distinctly different packages	FSCoord
CORPS FORWARDS PACKAGES TO HIGHER HEADQUARTERS WHICH	Assess the military and political impact Maintain a package file to expedite approval when requested	CG and Staff
CORPS APPORTIONS WEAPONS TO DIVISIONS TO INCLUDE	Area Time frame and timespan Employment constraints Prescribed nuclear loads (PNL)	CG G3 FSCoord
UNITS EXERCISE PLANS IN CPX's AND FTX's TO	Keep familiar with coordination and release procedures Refine or revise the package	CG's and Staffs

□ **Other Prehostility Nuclear Planning Considerations**

The Commander's Estimate. In chapter 3 the conventional wargaming performed by the commander and his FSCOORD was discussed, i.e., 1) analyzing the mission; 2) gathering information and determining significant factors; 3) comparing alternatives; and 4) announcing decisions and recommendations.

The same process applies to nuclear fire planning and coordination—and it answers the same question, "How will I apply my resources to best accomplish my mission?" It is particularly essential in planning nuclear fires that the commander and his FSCOORD stay in step throughout the complete estimate-wargaming process because *if employment of a nuclear package is considered, the corps is in a serious tactical situation.*

The FSCOORD's process of performing required functions and applying planning and coordination principles through wargaming with the commander and his staff results in the nuclear support plan for the packages selected by the commander. During wargaming, each package is hypothetically fired on the opposing force array to insure adequate coverage and threat defeat. Collateral damage is wargamed along with military effectiveness. The FSCOORD then incorporates the package into the nuclear support plan.

Fire Support Coordinating Measures. Characteristics of restrictive and permissive coordinating measures for conventional fire support apply to nuclear fires. FSCOORD's should, however, keep some key points in mind:

- The brigade or division CFL applies to surface-to-surface conventional fires and their effects. *It does not apply to nuclear fires.*
- The corps FSCL facilitates the attack of targets by all fire support means, including TAC air or nuclear fires. No coordination is required provided fires or their effects (except dazzle) do not fall short of the FSCL. All units

that could be affected by dazzle are notified because of the large distances concerned.

Command, Control, and Communications. A most critical factor in nuclear operations is the personal interactions—guidance and orders—that insure that the fires of a nuclear package impact at the designated time and place.

The communications facilities available to the FSCOORD are detailed in TC 6-10, *FA Communications*. The rapidity, complexity, and seriousness of employing nuclear weapons places a tremendous strain on communications systems—systems already stretched by conventional war demands, attack by enemy EW elements, combat losses, and wide frontages. There is no easy solution to this problem, but practice and training supplemented by vehicle and aircraft messengers will help. Procedures for dealing with anticipated communication problems may be specified in SOP's and exercised frequently for proficiency and improvement.

The mental wargaming done by the commander, maneuver staff, and FSCOORD's at corps and division is critical. Field exercises are enhanced by sending practice message traffic that includes release procedures, PAL instructions, and fire missions to *all* units and agencies. Units should be positioned in configurations similar to those from which they would fire the packages. This allows FSCOORD's to determine potential problems and work out solutions to them in advance of hostilities. Operational security (OPSEC) and, in particular, electronic countermeasures should be practiced. The command must train to reduce the distinctive communications signature associated with nuclear operations.

Nuclear Ammunition Distribution. Corps is apportioned a quantity of nuclear weapons. Some of these weapons are further apportioned to the divisions. Field artillery and engineer units are provided a prescribed nuclear load (PNL) that places weapons in the units that will most likely fire the

subpackages. Division PNL's are listed in the division OPORD. Nuclear weapons from Navy or Air Force delivery systems may be included in division subpackages, but weapon custody will remain with those services. Final PNL distribution to firing units is a critical factor. For a number of reasons not all of the firing units originally scheduled to fire the package may be available. Additionally, the tactical situation may be changed significantly from the plan. Accordingly, the FSCoord's must arrange for and insure final redistribution of weapons so the nuclear package can be fired as approved. This coordination can place heavy demands on communications and transportation. Nuclear weapons redistribution may require transportation and security assistance from maneuver elements and other combat support and combat service support units.

Poststrike Analysis. Poststrike analysis is normally coordinated from the corps/division FSE. The FSE, jointly with the corps TOC and division main CP, must:

- Determine where the requirement for poststrike analysis will exist.
- Designate sources to collect poststrike analysis information.
- Evaluate poststrike effects to determine if the enemy was stopped, how badly damaged he is, and his capability to resume the attack.
- Analyze civilian casualties and facility damage and determine what actions will be required.

Poststrike analysis uses all information means available; however, requirements for speed in evaluating strike effectiveness will place principal reliance on aerial surveillance, frontline commanders, and FIST and FSO reports. Technical procedures for poststrike damage prediction are found in FM 101-31-1.

6-5. Planning and Employment During Hostilities

□ Planning and Coordination During Hostilities but Prior to Request for Release.

Corps nuclear weapons packages published in OPLAN's prior to hostilities, and in OPORD's during hostilities, are *not* fixed target lists. The package parameters—*purpose, number of weapons, time frame, timespan, and area*—and employment constraints provide the required national-level control over nuclear employment. Within the limits of the package parameters and employment constraints, the package will be refined to provide the best tactical effect. The package concept, therefore, provides the tactical commander the *flexibility* and *responsiveness* to be effective in an actual conflict without violating NCA directives. Like conventional fire support planning, nuclear fire support planning is a *continuous and dynamic process*. Throughout prehostilities and after a conflict begins, staff sections at division and corps work to insure a high state of readiness to employ a corps package if required. Recognizing the limitations of target acquisition, they plan to maximize lethal weapons effects in those areas the enemy *must* occupy.

During hostilities, each command echelon will provide more detailed nuclear planning guidance as the situation develops. Within the limits of this guidance, an appropriate planned package is selected and refined to support planned operations. This might include modification of number or size of weapons, time, or area. The time frame during which the package might be needed is also predicted. This is not a one-step refinement but a *continuous* process of adapting plans to the situation. It must be continuous so that when the corps commander decides to employ nuclear

weapons effective packages are ready. As the likelihood of requesting a nuclear weapons package appears to be more imminent, the following steps are begun—usually in the order shown below:

- Identify the contingency used for planning that is closest to the actual tactical situation.
- Reapportion weapons between

subpackages.

- Identify and prioritize aimpoints for employment.
- Make tentative associations of delivery units with aimpoints based on current unit locations and PNL's.
- Redistribute the PNL as required.

An overview of planning activities is as follows:

PLANNING DURING HOSTILITIES BUT BEFORE RELEASE REQUEST

WHAT	HOW	WHO
Corps Reviews Nuclear Plans	□ Assesses tactical and strategic situation. □ Provides guidance to corps staff. □ Provides guidance to the division.	CG, G3, G2, FSCoord
Corps Selects Package for Corps Contingency	□ Identifies prehostility package and contingency that is closest to the real situation. □ Direct division to refine their subpackages. □ Refines package to better support tactical operations. □ Reapportions weapons between subpackages. □ Begins refinement of aimpoints. □ Makes tentative association between aimpoints and delivery units for corps controlled weapons. □ Recommends PNL redistribution as required.	Corps CG and Staff CG, G3, FSCoord G2, G3, FSCoord FSCoord
Corps and Divisions Continually Assess Tactical Developments	□ Monitors conventional defense. □ Monitors locations of nuclear weapons and delivery systems.	CG's, Staffs Tactical Units

☐ Nuclear Package Request and Release

Nuclear employment begins when the corps commander decides that the tactical situation is going to warrant employment of nuclear weapons and submits a request for an appropriate package. Indicators to the corps commander that a situation is developing that warrants the use of nuclear weapons are:

- ☐ corps under sustained attack by superior forces;
- ☐ own forces becoming fully committed and not likely to be sufficient;
- ☐ reinforcements, combat support, and combat service support not available to sustain the force; and
- ☐ survivability of the force in question to include nuclear weapons and delivery systems attrition.

Corps will usually request a package exactly as planned and recorded in echelons above corps. If, however, refinement during hostilities indicates that a change must be made in the number of weapons, the area, or the timespan, corps will request the package as modified by the specified package parameters. The corps commander must weight the utility of using the package as planned against the delay that might be caused by requesting changes.

During the nuclear planning process, echelons above corps will have evaluated the tactical and strategic impact of each package prior to hostilities. Nevertheless, corps should anticipate the need for nuclear employment and request a package well before the beginning of the time frame for which it is needed. The NCA could—if the tactical and strategic situation warrants—approve the use of a package *before* a corps request is received. Timing is critical in the planning and decisionmaking process to put package execution into motion within the corps. The corps commander must become personally involved at certain critical thresholds (fig 6-10). His guidance and direction at these points insure that the refinement actions going on simultaneously

at all levels fit his concept of operations. The capability and time required for delivery units to react to changes are also important considerations as the nuclear package refinement process is continued until execution.

The corps FSCoord/corps artillery commander is a key figure in the nuclear planning and coordinating process. He advises the corps commander as to the status of nuclear delivery means and supervises the nuclear planning and coordinating activities in the corps FSE.

☐ Corps Controls Employment

The employment of an approved package is controlled by corps. Weapons are employed only in those areas where the presence of enemy units or installations is known or highly probable and against fixed targets which are critical to the enemy. Corps may reapportion weapons among division subpackages and will select a time to initiate the pulse. Corps may also maintain control over the employment of each weapon in the package until weapon launch. Within the limits established by higher authority, corps will determine the degree of freedom divisions may exercise in the employment of the package. Once corps has selected the time to begin the pulse, divisions will normally refine and employ their designated subpackages within the approved employment constraints, approved package parameters, and normal fire support coordination procedures. Most refinement will be conducted in the division FSE's; however, division FSE's may delegate weapon and aimpoint refinement authority to subordinate elements. Within the limits established by higher authorities, such refinements may include authority to

- ☐ move aimpoints,
- ☐ adjust yields within constraints, and
- ☐ change time-on-target.

When delegating refinement authority care must be taken not to reduce the desired level of casualties or damage in one area at the

expense of another and to preclude preinitiation and other weapon interference. This is accomplished by placing limits on *how far* aimpoints may be moved. To insure the safety of friendly troops, the minimum safe distance for weapon aimpoints from friendly troops must be considered during final weapon and aimpoint selection. Refinements may be made right up to the time of firing if the response capability of delivery units permits. Details of package refinement are discussed in appendix I.

Areas of Concern for FSCOORD's

Corps and division FSCOORD's should view the employment of a nuclear package as a large-scale time-on-target fire mission. Coordination is more difficult because numerous delivery systems contribute, numerous units both in and outside the division participate, communications traffic may be heavy, and because of the requirement for the actual pulse to be wholly contained within the timespan. Specific items of interest to FSCOORD's include the following:

- Do planners have accurate, up-to-date firing point locations?
- Will firing units have the correct number and yield of nuclear weapons with enough lead time to prepare them so that firing is not delayed?
- Are all units familiar with communications and firing procedures so that execution goes smoothly?

Warning Friendly Units

Planning must include unit warning procedures. The corps is responsible that all subordinate and adjacent units are notified of the package timespan. Actual warnings of imminent nuclear detonations are sent through command channels from the corps and division FSE's, the division main and

tactical CP's, the div arty TOC, and, possibly, from firing units. The details and format for a STRIKWARN are in FM 101-31-1. These communications should be electronically or manually encoded, and if a brevity code is used, it should be: 1) in the CEOI; 2), phonetically the same as that used for daily traffic; and 3) changed daily.

Sequence of Events for Nuclear Release and Employment

An outline of a typical sequence of events during nuclear release and employment is shown below.

Circumstances for nuclear employment exist when:

- Corps cannot accomplish mission conventionally.
- Corps will sustain such losses it will not be viable.
- Corps commander requests release:
 - Well before time frame required.
 - Usually for a preplanned package.

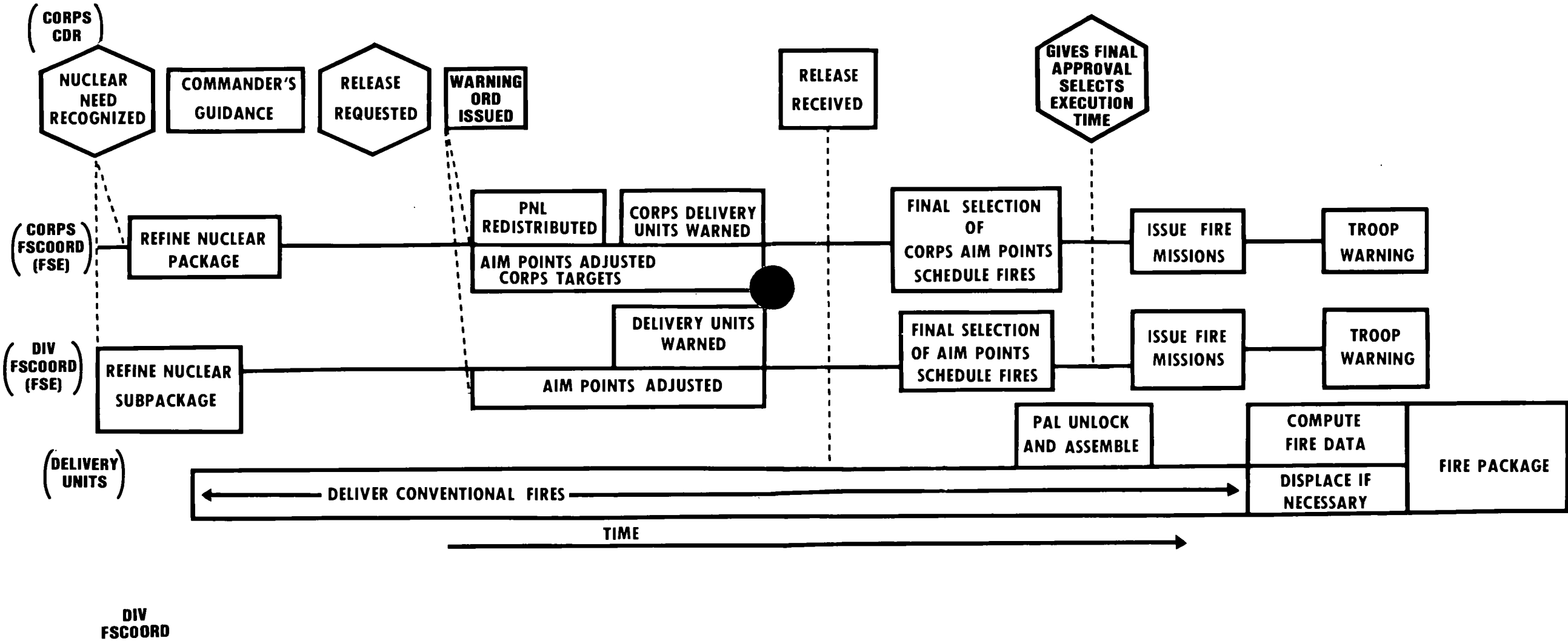
Package refinement performed within the limits established by higher authorities, employment constraints, and package parameters including:

- Moving aimpoints.
- Adjusting yields.
- Reducing the number of weapons required.
- Adjusting schedule within timespan.
- Move timespan within time frame.

Package release approved, which requires:

- Final selection of delivery units, weapons/yields, and aimpoints.
- Sending fire mission to delivery units.
- Coordinating with adjacent divisions.
- Issuing STRIKWARN.
- Firing the package.
- Poststrike analysis.

FIGURE 6-10. CRITICAL NUCLEAR "THRESHOLDS"/KEY NUCLEAR ACTIONS.



6-6. Chemical Planning and Employment

US Chemical Policy

The basic elements of the US chemical policy are:

- No first use of lethal or incapacitating chemical agents.
 - The option to retaliate by using lethal or incapacitating agents against an enemy force that uses them first.
 - The requirement for National Command Authority approval for a retaliatory chemical strike.
 - The requirement to avoid risk to civilian population to the maximum extent possible.
- The decision to employ chemical weapons made by the NCA in response to first use by the enemy will not necessarily permit unrestricted use of these weapons. Military or political considerations may still limit their use.

The Chemical Threat

Soviet and Warsaw Pact forces are well trained and equipped to use chemical weapons and survive in a chemical environment. Their chemical warfare policy is characterized by an aggressive program of research and development of chemical agents, delivery systems, and defensive equipment, and regular, realistic training. Soviet doctrine stresses the surprise aspect of chemicals as a contributor to superior firepower that facilitates major penetrations and destruction of forces.

The opposing force in the Far East has a limited chemical capability compared to US and European threat weapons. They do have incapacitating and lethal agents that can be disseminated by aircraft, spray, bombs, and cannon shells. Delivery systems include aircraft, surface-to-surface missiles, multibarrel rocket launchers, and 122-mm

guns or larger calibers. There is limited information regarding their first use of chemicals, but it can be assumed that the opposing force will employ chemicals if the tactical situation warrants.

As a result of this significant chemical threat, the battlefield commander must consider:

- The requirement to plan and train for chemical warfare to offset the degradation of personnel efficiency caused by operating in a chemical environment. The effectiveness of a chemical attack can be significantly reduced by proper training and use of protective equipment. Without this, chemical effects can be as devastating to personnel as nuclear effects.
- The planning and preparation necessary to retaliate against the enemy's first use of chemicals so he will terminate further chemical operations.
- The coordination required, after release, to combine chemical, conventional, and nuclear fires with maneuver to achieve the best tactical effect.

Chemical Weapons Effects

Massed, surprise toxic chemical fires, if properly employed, can:

- create tremendous casualties in a relatively short time;
- contribute to neutralizing the numerical advantage of the enemy;
- reduce the effectiveness of his combat formations;
- disrupt rear area operations and troop movements;
- restrict or deny the use of key terrain; and
- degrade the combat efficiency of enemy troops by forcing prolonged wearing of protective masks and clothing.

Chemical weapons have effects on unprotected personnel ranging from mild incapacitation to rapid lethality, as shown on the following chart:

CHARACTERISTICS OF CHEMICAL AGENTS

This chart shows typical US agents and their effects. Opposing forces have similar agents with similar effects.

Category	Symbol	Normal Physical State When Disseminated	Persistency in Target Area	Tactical Use	Time to Incapacitation
Nerve Agent	GB	Vapor or Aerosol	A few minutes	Lethal effect on un-masked troops.	Very short; death may occur within a few minutes if agent is inhaled.
Nerve Agent	VX	Liquid	A few hours to a week	Lethal effect or contamination of terrain and equipment.	A few hours (delayed casualties).
Blister	HD	Liquid	Usually a few days, possibly a few weeks.	Incapacitation of troops; contamination of terrain and equipment.	A few hours (delayed casualties).

☐ **Chemical Weapon Applications**

Chemical weapons and nuclear weapons have similar application in the offense and defense. Additional chemical applications are:

Offense

- ☐ Protect the flanks and axis of advance.
- ☐ Fix defensive and reinforcement forces in position.
- ☐ Contaminate counterattack and reinforcement routes.
- ☐ Isolate selected terrain.

Defense

- ☐ Contaminate avenues of approach.
- ☐ Slow attacking forces.
- ☐ Restrict or deny the use of critical terrain.

☐ **Chemical Planning**

The responsibility for planning, coordinating, and controlling chemical weapons remains at corps until after release has been approved and, most likely, through the first retaliation fires. The detailed planning and coordination is done at division. If our retaliation does not terminate chemical activities, authority to employ chemical munitions can be passed to division and brigade. They are more responsive to the tactical situation and can better control, coordinate, and exploit the use of the weapons. Our response to enemy chemical initiatives must be of such magnitude as to: 1) produce significant casualties; 2) support our scheme of maneuver to attain a tactical advantage; 3) discourage further chemical use by the enemy; and 4) restrict his mobility and reduce his mission effectiveness.

Chemical retaliation must be sufficiently flexible to allow fires against specific limited targets or over a theater-wide area.

☐ **Commander's Guidance**

The planning process for chemical agent employment begins when the commander provides planning guidance to his staff. This guidance will specify:

☐ Contamination requirements or restrictions (contamination desired, contamination authorized, preclude contamination). The impact on future operations caused by residual contamination must be considered.

☐ Effects desired on the enemy (lethal or incapacitating).

☐ Time in which casualties are required (immediate or delayed casualties).

☐ The amount of target coverage required.

☐ Limiting requirements. Limiting requirements specify the acceptable risk to friendly troops and civilians. Additionally, they may include such restrictions as areas which may not be attacked for political reasons and types of chemical agents that cannot be used.

☐ **Employment Considerations**

Working with the FSE and the nuclear, biological, and chemical element (NBCE), the FSCOORD plans the best combination of chemical weapons systems to meet the commander's guidance. In doing so, the FSCOORD considers:

☐ **Weather and Terrain.** Weather (temperature, temperature gradient, windspeed and direction) directly influences the effectiveness and persistency of an agent. For example, blister agent is most effective in hot, humid weather and freezes at 58°F. If HD is employed for its vapor effect in cold weather, the agent would produce only minimal effects at best. Weather also has an indirect bearing on the effectiveness of agents by influencing the type and amount of clothing worn by enemy troops. As the temperature increases, troops generally wear less clothing, which exposes more skin area and increases their vulnerability to a chemical attack. Terrain must also be a consideration when analyzing a target. Strong wind current in mountainous regions break up agent clouds before the agent can reach full effectiveness. In heavily wooded areas, more munitions might be required if a substantial number of rounds fail to

penetrate the jungle canopy. Weather information will be provided by the Air Force Air Weather Service (AFAWS). Wind data can also be obtained from the FA met section.

□ **Training/Protection Status of Enemy.** The casualties created by a chemical agent are influenced by the training status of the attacked unit and the available chemical protective equipment and clothing. The G2 will assist in providing this information. The *best* place to cause casualties is with the units in contact and their reserves. However, these targets may be the hardest to attack because of the enemy's training level and special purpose protective equipment. Enemy frontline units should be attacked, but special attention should also be placed on rear area installations where the troops are more "relaxed" and protective equipment may not be as available. These are areas where we can surprise the enemy and inflict heavy casualties.

□ **Target Description.** The target size, location, and composition must be known if agent effects are to be accurately predicted. All-source intelligence will assist in providing this information.

□ **Unit(s) to Fire.** The range from the delivery unit to the target affects target coverage and chemical munitions requirements. The delivery system ranges are provided by the division artillery TOC.

□ **Delivery Systems.** Normal delivery systems/chemical agent combinations are:

105-mm howitzer	GB, HD
155-mm howitzer	GB, HD, VX
8-in howitzer	GB, VX
115-mm rocket system	GB, VX
Aircraft	GB, VX

□ **Chemical Munitions Availability.** If certain types of chemical munitions are limited in number, then it may be necessary to recommend another type of fire support to accomplish the mission. Sufficient chemical munitions are not normally carried in the FA battalion basic load to achieve the results required by a commander. This will require a significant logistical effort to get the

necessary munitions to the right firing units in time to fire the chemical missions.

□ **Integration with Other Combat Power.** Chemical fires may be used alone, but are more effective when mixed with conventional munitions, or combined with nuclear weapons, if authorized.

□ **Priorities of Targets to be Attacked.**

The FSCOORD's chemical recommendation to the commander includes the delivery unit and means, type of agent, method of attack, aiming points, time of attack, and predicted casualties.

□ **Fire Support Coordinating Measures**

The principles of boundaries and restrictive and permissive coordinating measures also apply to chemical fires. Special emphasis must be placed on coordination between adjacent units, especially when the agent employed forms a toxic chemical cloud that may drift beyond the boundaries of that unit.

□ **Chemical Support Plan**

Chemical planning is formal planning. The document is a plan that supports an OPORD and is referenced in paragraph 3 of the OPORD. Details on the chemical support plan are contained in appendix I, and an example is at tab H of appendix I. Corps is the initiating and control headquarters for initial chemical plans. The division FSE, NBCE, and the chemical officer provide significant input to the plan based on their operational areas.

□ **Warning Friendly Units**

The NBC-3 report (chemical) described in FM 21-40 is used for warning our forces of friendly chemical attacks. This report gives the date/time of the attack, the location of the attack, and the area of expected contamination. The NBC-3 report (chemical) is disseminated through command channels by the FSCOORD, NBCE, FSO's, and firing

units. To prevent warning the enemy, this should be done by secure communications or by providing a CEOI code.

6-7. Conventional-Nuclear Scenario

The scenario that follows highlights the planning and coordination conducted by various corps and division staff agencies in a specific tactical situation.

□ Prehostility Planning

The 1st and 2d US Divisions are currently deployed in a defensive posture against a predicted force of four first echelon tank divisions and four second echelon divisions.

During the wargaming process to develop the nuclear fire plan several critical contingencies were identified that might require nuclear employment (fig 6-11).

The corps commander gave the following guidance:

"The most critical area (1) is in the 1st Division sector. This is the best high-speed approach and where the enemy is most likely to make a breakthrough. The next most critical area (2) is through the 2d Division turning west, north of Hill 500 into the 1st Division sector. The final area (3) is the high-speed approach perpendicular to a line between Hills 1200 and 900. The enemy must be held north of this line so the corps has room to maneuver. Penetrations south of the line will seriously jeopardize the corps mission and allow the enemy easy access into the theater rear area.

"Plan nuclear weapons in depth to a line south of E and F towns. Insure that nuclear fires are integrated with the conventional fire plan and maneuver plan.

"Employ sufficient weapons to halt the enemy advance so that we can reconstitute a conventional defense. Use the target defeat, collateral damage preclusion and troop safety criteria outlined in the corps SOP."

The corps SOP specified:

Target Defeat Criteria: Achieve at least 30 percent immediate transient incapacitation (ITI) coverage to personnel in tanks over no less than 40 percent of enemy maneuver units in the first echelon divisions; 20 percent in second echelon divisions; and 50 percent coverage to protected personnel against 130-mm, 150-mm, and MRL batteries.

Collateral Damage Preclusion Criteria: Preclude 5 percent incidence of casualties requiring hospitalization to personnel and preclude 5 percent incidence of moderate damage to single story masonry buildings in urban areas of * population or more (99-percent assurance level).

Troop Safety Criteria: Do not exceed a negligible risk to unwarned exposed personnel.

The corps commander further stated:

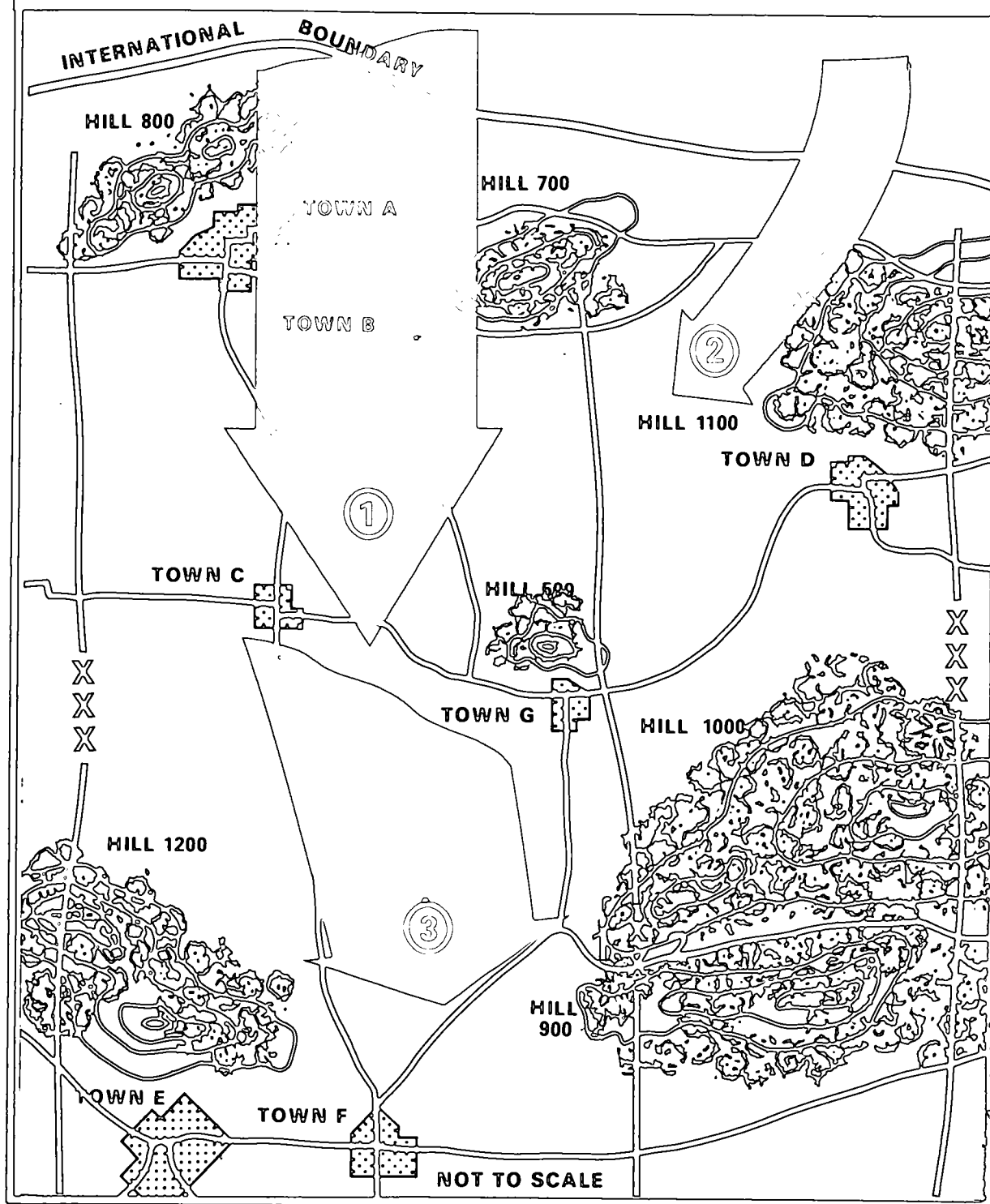
"Additionally, we have been allocated 12 air-delivered weapons for planning.

"Be prepared to attack with conventional fires those forces that are still moving after the nuclear weapons have been fired."

Following the corps commander's briefing, the corps G3 provided assumed lines of contact for each of the three corps contingencies described by the corps commander and directed the divisions to develop division subpackages for each of the three contingencies. The corps and division G2 sections evaluated the threat and performed a detailed terrain analysis to develop a threat array of maneuver and fire support units and command posts for each contingency. These arrays were used by the corps and division FSE's to determine nuclear weapon requirements to meet the commander's guidance.

Division FSE's developed subpackages for each of the three contingencies based on area coverage, collateral damage constraints, and the predicted threat array. Overlays of proposed aimpoints, weapon requirements, schedule of fires, and timespan for each subpackage were sent from the division

FIGURE 6-11. CORPS CONTINGENCIES.



FSE's to the corps FSE. The corps FSE consolidated the division subpackages for each contingency and added aimpoints and weapons to determine the total weapon requirements for each contingency.

The corps G3, after coordination with the corps FSE, recommended two packages to support the corps operations—package ELM to support contingencies 1 and 2, and package OAK to support contingency 3. This is graphically shown in figure 6-12. These overlapping packages permitted the corps commander maximum flexibility to assess when and where to initiate nuclear weapons employment. The weapon requirements for all contingencies within each package area were consolidated by the corps FSE to determine the maximum number of weapons by yield needed to support any one contingency in the package.

For each contingency, the corps FSE determined an area and timespan. The corps FSE then resolved these areas and timespans into a single area and timespan for each package that was suitable for all contingencies in the package. Packages ELM and OAK were forwarded to higher headquarters for assessment in the following format:

1st Corps Nuclear Weapons Package OAK

Purpose: To halt enemy penetration north of a line between Hills 1200 and 900 and permit reconstitution of a conventional defense.

Number: * nuclear weapons not to exceed
 * — 155-mm/0.1 kt; * — 155-mm/0.5 kt; * — 8-in/0.5 kt; * — 8-in/2.0 kt; * — 8-in/5.0 kt; * — Lance/5.0 kt; * — Lance/10.0 kt; * — ADM/1.0 kt; * — TACAIR/2.0 kt; * — TACAIR/10.0 kt.

Time: Time frame—to be requested when needed.
 Timespan—not to exceed * minutes.

Area: From MB 9668 to MB 0838 to MA 3757 to MA 9886 to MB 9668.

Constraints: Preclude 5 percent casualties requiring hospitalization in urban areas over * population and 5 percent moderate damage to buildings in those communities (99 percent assurance level).

**Actual numbers are situational.*

Note. Yields shown above are hypothetical.

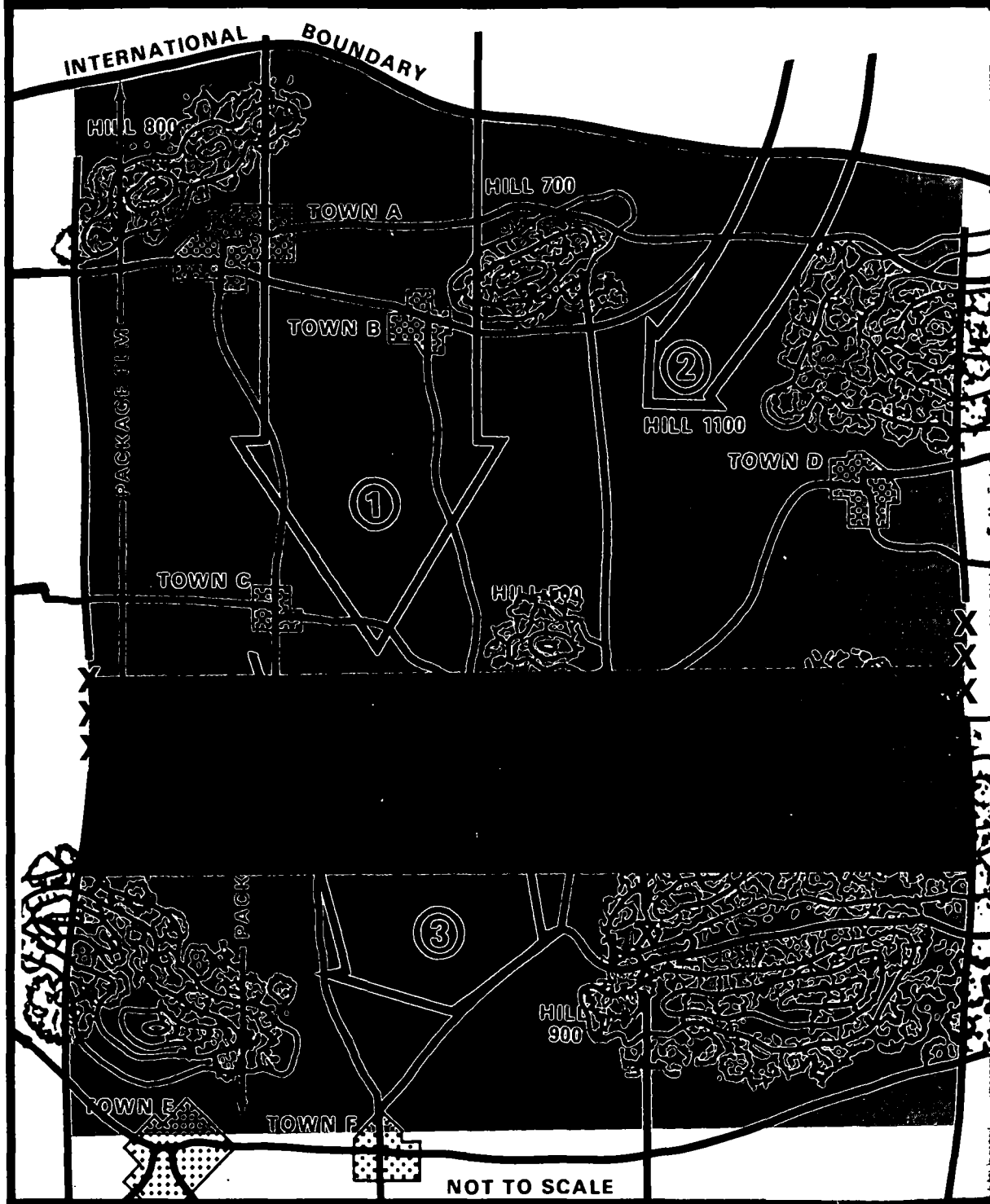
The tactical utility and potential strategic impact of these subpackages were evaluated, and the planning was approved. The packages were reviewed and approved at higher headquarters, forwarded to higher military and political authorities, and published in the appropriate corps and division OPLAN's. The packages were continually reviewed, revised, and exercised in corps and division FTX's and CPX's.

☐ Nuclear Planning During Hostilities

When hostilities began, the 1st Division was pushed back after several days of fighting (fig 6-13).

According to the G3, the enemy's first echelon forces had been stopped, but the division had all forces committed. A light infantry brigade was on the way to hold the critical terrain on Hill 1200. The 2d Division had stopped the enemy in sector, but the corps commander committed the separate mechanized brigade to reinforce the division. There were no more reserves available.

Before the situation reached this point, the corps and division commanders and their staffs had been refining the nuclear packages for the developing tactical situation. Due to the mountainous terrain, the 2d Division was holding, and it was not anticipated that the enemy could make further gains without significant reinforcement. The 1st Division sector, with any enemy reinforcement, would become critical and the division probably

FIGURE 6-12. PACKAGES TO SUPPORT CORPS OPERATIONS.

could not hold. This could give the enemy a clear path to the corps rear area. The prospect of nuclear employment in the 1st Division was now first priority business.

The 1st Division commander gave the following guidance:

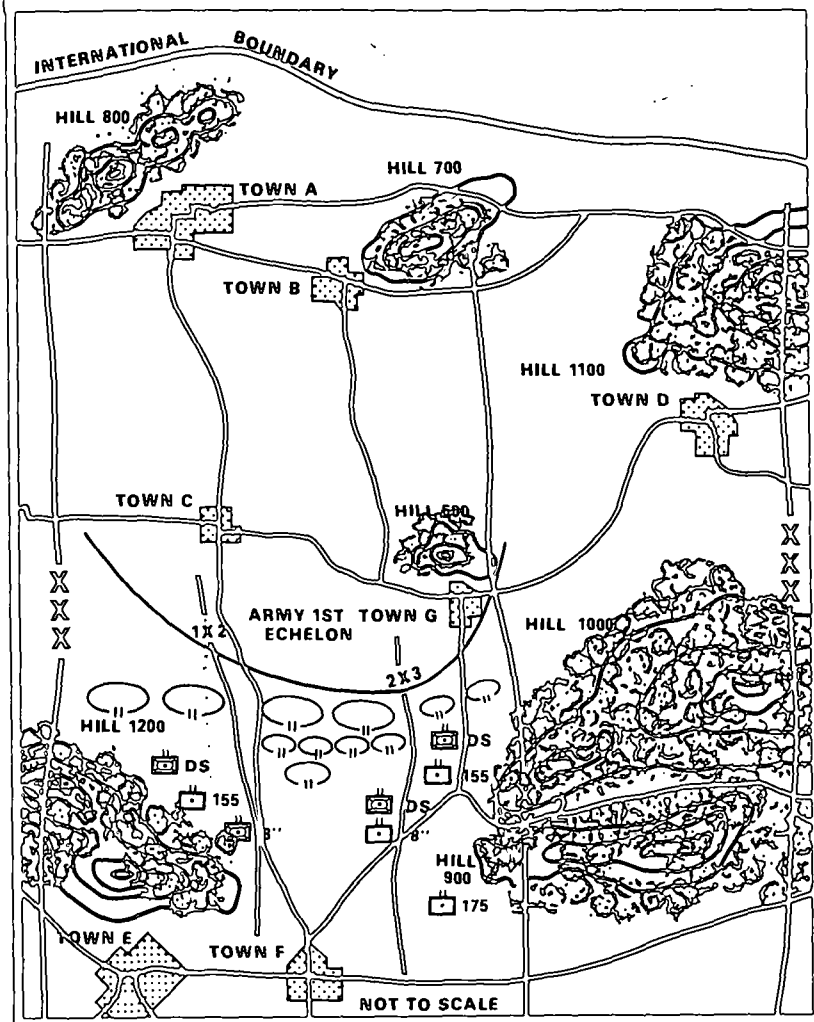
"The corps commander and I are convinced that if nuclear employment is required, it will be package ELM. Refine your aimpoints and weapon requirements based on known and suspected enemy locations and our present firing positions.

"I want to pay particular attention to the approach along our east boundary. Some of the forces fighting the 2d Division could split off and hit us on our right flank. Be especially watchful for second echelon forces. A potential breakthrough point for them would be on our east side.

"Make no changes to the SOP in either target defeat or collateral damage preclusion criteria.

"Work closely with the corps staff on this and keep in touch with the 2d Division. Get back to me as soon as possible with your plan or any other guidance you might need. Time is getting short."

FIGURE 6-13. DEPLOYMENT AFTER SEVERAL DAYS OF FIGHTING.



The critical tasks for the division staff were to:

- ☐ Refine known and likely locations for the forces in contact.
- ☐ Identify and locate any approaching second echelon forces.
- ☐ Refine aimpoints for attack.
- ☐ Reposition nuclear fire units and redistribute PNL's if necessary.
- ☐ Locate any sizeable refugee centers and determine population status in towns Charlie and Golf.

The G3 coordinates the staff activities. In conjunction with the FSCOORD he provides the staff an update on the current friendly situation and status of maneuver and fire support units.

The G2 has the primary responsibility to locate the enemy. He provides input to the G3 and FSCOORD from:

- The division all-source intelligence center, which provides intelligence data gathered from divisional resources and the corps all-source intelligence center. This is the most likely agency to identify the approach of second echelon divisions.
- The G2 air (from both air and ground reconnaissance).
- The counterintelligence and interrogation element.
- The combat intelligence company.
- The special security office.
- The brigade S2's and the division artillery TOC.
- The corps G2/G3 operations section.

The G5 is responsible for providing the G3, G2, and FSCOORD:

- Any refugee information available for the planned target area.
- Information as to the civil affairs or psychological impact of the strike on towns Charlie and Golf.
- Updated information on the number of civilians in and around Charlie and Golf towns.

At this stage of an operation, however, the G2 may have more and better information on the civilian disposition than the G5.

The FSCOORD is responsible for:

- Target analysis.
- Moving aimpoints.
- Refining the weapon and yield, within constraints, for each aimpoint.
- Recommending substitution of one weapon for another, and making substitutions as necessary.
- Repositioning fire units as required.
- Recommending to the G3 repositioning of maneuver units or exceptions to troop safety requirements.

- Recommending changes to unit PNL's and reappportioning weapons as necessary.

- Precluding collateral damage as prescribed by the commander.

- Insuring proper nuclear release by firing units.

- Refining and recommending the timespan. The FSCOORD briefs the commander on possible alteration of the timespan based on delivery unit availability, relocations, or changes in missions.

He accomplishes these tasks as follows:

The target information provided by the G2 is refined into the most accurate target information.

Directing the activities of the FSE and the NBCE, the FSCOORD refines each aimpoint for the appropriate weapon and yield. As required, the FSCOORD *coordinates directly with the:*

- Corps FSE
- Div Arty TOC
- FA Brigade
- Brigade FSO's
- FA Battalion Commanders
- ALO/ANGLICO Representative
- ADA Officer
- Engineer Officer

This coordination is particularly critical in terms of smaller yield weapons near the FEBA. The confirmation of target locations close to the FEBA by the FSO's who have input from their FIST's can result in aimpoints that would insure maximum coverage of enemy units.

In this situation, the FSCOORD decided not to recommend repositioning any firing units or reappportioning the PNL. The current dispositions were sufficiently flexible to handle the situation. He also began coordinating with the ALO about the status of aircraft and weapons and with the corps FSCOORD concerning the Lance.

The FSCOORD coordinated the package refinements with the G2, G3, and the corps FSE. He also provided the FA battalions with all possible information so they could

- Begin nuclear weapon prefire operations

as specified in appropriate system technical manuals.

- Perform any required survey and develop and maintain the latest meteorological and velocity error data.
- Precompute firing data.
- Select firing positions if necessary.

Fire unit commanders must be careful to avoid signature activities that would compromise our intentions to the enemy. The appearance must be "business as usual."

The commander was briefed on the refined

package, and he approved it.

□ Nuclear Release and Employment

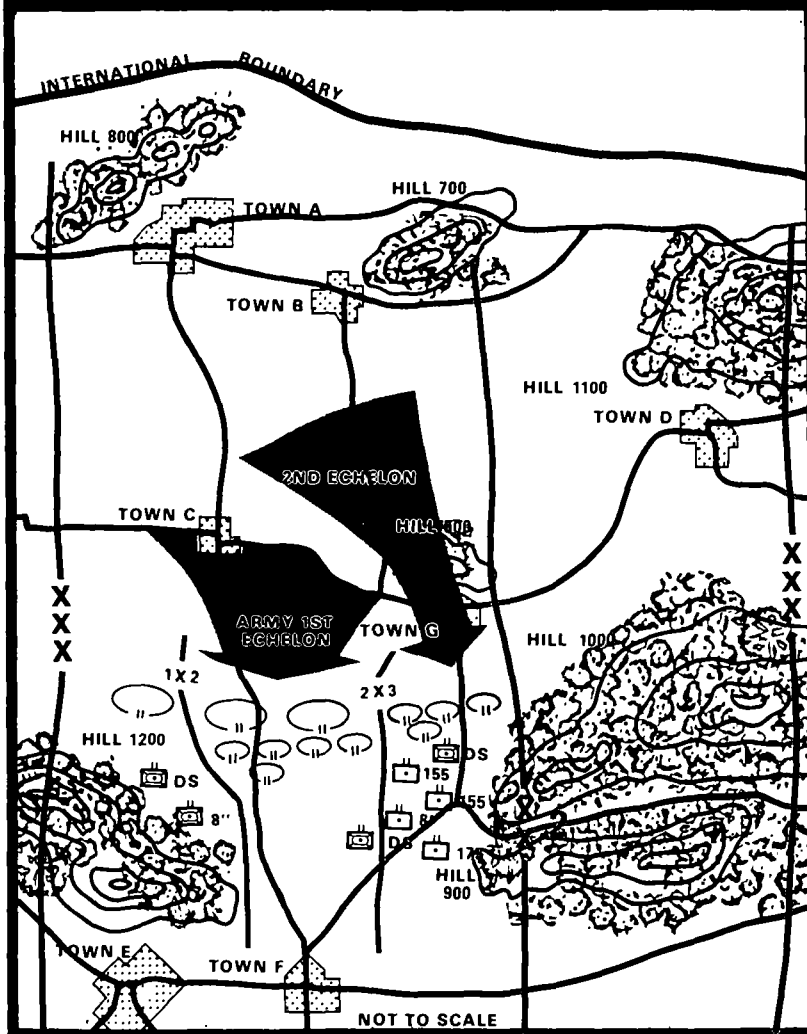
The commander received information from the corps and his own intelligence sources that fresh second echelon divisions were moving into the northeast part of the division sector. It appeared that their intention was to make a breakthrough in the division sector. The corps commander requested release of package ELM. The commander gave this guidance to his staff:

"G2, concentrate your efforts on locating the second echelon divisions. Get what intelligence you can on *their* nuclear or chemical intentions. They know that those are the only ways *we* can stop them now. A combined chemical and nuclear attack against our nuclear-capable units might tip the balance in their favor.

"G3, we need more forces in the 3d Brigade. With the light infantry brigade on Hill 1200, I think we can move one TF from the 1st Brigade to the 3d Brigade. Check with the corps G3 to see if we can use the ACR squadron that was in the CFA in the 3d Brigade.

"FSCoord, continue to refine our nuclear package ELM. You will need to coordinate closely with the 2d Division. Many of our fires will be close to their boundary, and they will be firing when we are. I want maximum damage to the enemy we have stopped, and I want to stop the second echelon forces "

FIGURE 6-14. CURRENT DEPLOYMENT.



The G3, coordinating with the FSCoord, repositioned units. Corps released the ACR squadron, and it was positioned on the division right flank. One task force was taken from the 1st Brigade and put with the 3d Brigade. The FSCoord repositioned FA units to place the bulk of the division artillery fires into the 2d Brigade and 3d Brigade sectors (fig 6-14).

The corps commander reapportioned eight 155-mm, five 8-inch, three Lance, and one TACAIR weapon from the 2d to the 1st Division. As the battle developed, the FSCoord continually refined aimpoints while keeping a constant watch on PNL's.

The FSCoord, coordinating with the G3 and as approved by the commander, adjusted the PNL distribution and insured that the weapons that the FA battalion would fire in the package were at the battalions' field storage locations (FSL). Some examples of how he accomplished this are:

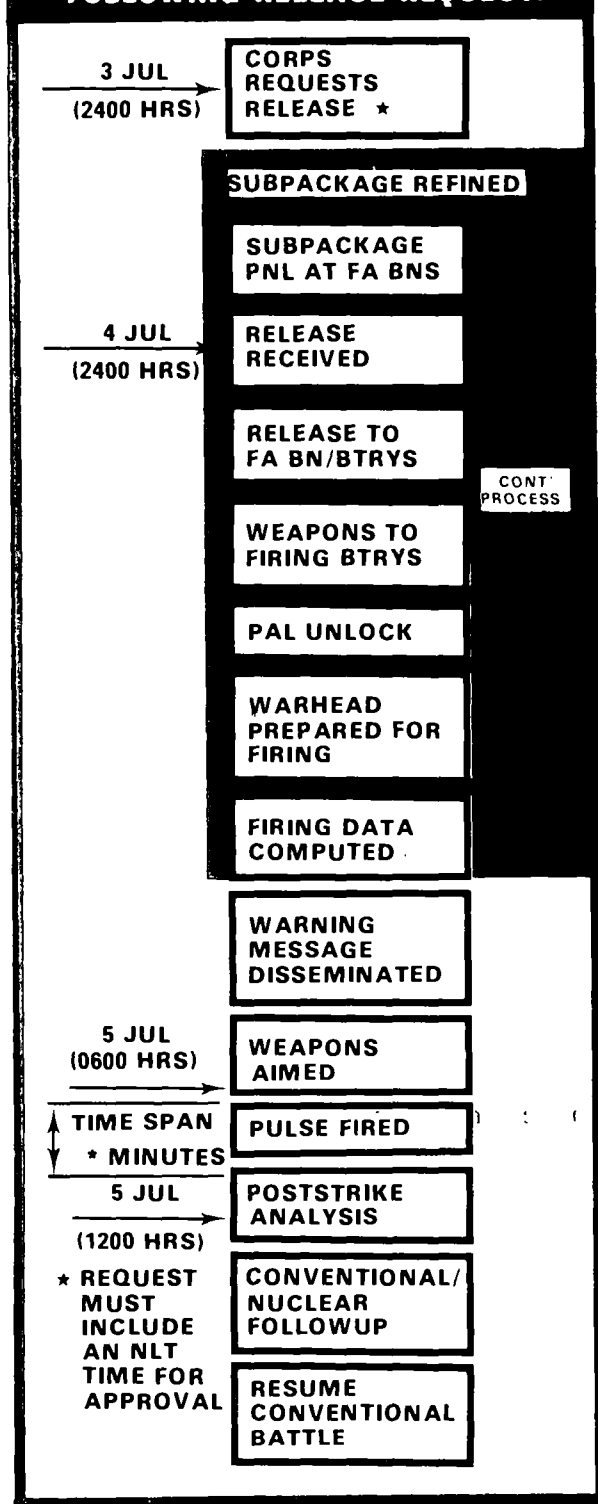
- He ordered the DS FA battalion commander with the 1st Brigade to deliver three 155-mm/0.1 KT weapons to the 2d Brigade DS battalion by vehicle.
- He coordinated with DISCOM and the aviation officer and airlifted two 8-inch weapons from the 8-inch battalion in the 1st Brigade to the 8-inch battalion in the 3d Brigade.
- He directed the FA brigade commander to coordinate with the 2d Division FSE and had the 155-mm and 8-inch weapons reapportioned by the corps commander.
- He coordinated with the G3 for additional security forces to safeguard convoys.
- He coordinated with DISCOM for additional transportation since he had insufficient organic assets.

As appropriate for the weapon system and based on the commander's approval, the FSCoord directed the FA battalion to begin prefire checks and weapon assembly.

Corps received approval to employ package ELM with the timespan to begin in 6 hours. This was a critical and busy time for the FSCoord, FSE, division artillery TOC, FSO, and nuclear firing units. This sequence of events which followed the corps request for release is shown in figure 6-15.

THE TIME FROM NUCLEAR RELEASE REQUEST TO PACKAGE EMPLOYMENT IS A CRITICAL AND BUSY ONE FOR THE DIVISION FSCoord. HE MUST INSURE TOTAL COORDINATION OF NUMEROUS ACTIONS. SOME OF THESE KEY ACTIONS ARE:

- SUBPACKAGE REFINEMENT,
- REFINEMENT OF AIMPOINTS,
- REAPPORTIONMENT OF PNL'S,
- TRANSPORTATION OF REAPPORTIONED WEAPONS TO APPROPRIATE BATTALION FSL'S, AND
- COMMUNICATION OF NECESSARY RELEASE AND PREPARATION INFORMATION TO EACH FIRING UNIT.

FIGURE 6-15. EVENTS FOLLOWING RELEASE REQUEST.

Each firing unit must receive the release authority, aimpoint, yield, height of burst, and time-on-target in time for decoding. This is a time when responsive communications are critical. Some special considerations apply.

□ The firing batteries in the DS battalions do not have RATT facilities. The GS firing batteries have this capability. Accordingly, the DS battalion commander may have to get nuclear firing information to the batteries by messenger, face-to-face meetings, secure voice, or fire mission codes.

□ The FSCoord may use a combination of organic FM and SSB radios, wire, messengers, and the sole and common user multichannel systems.

□ All the communications capabilities of the division artillery TOC and FA brigade must be exploited to provide alternate communications assets.

Final firing preparation included:

- Final weapon movement to the specified firing batteries,
- Permissive Action Link (PAL) unlock,
- Assembly, and
- Fuzing.

Final firing data was computed and refined with the latest meteorological and muzzle velocity corrections for deflection, quadrant, and fuze settings. Final coordination was made with Air Force, Lance units, and the 2d Division.

Conventional fires must continue at generally the same pace. Any noticeable slackening of conventional fires, particularly indirect fires, or a significant increase in radio traffic can be a distinct tipoff to the enemy that a nuclear strike is imminent.

A half hour before the pulse began, the G3/G2 operations, FSE, and the division artillery TOC transmitted secure STRIKWARN messages through command channels. Units near the strike area made final preparations to take cover. Equipment was shielded, and all soldiers in the brigade areas covered exposed skin areas and, based on an anticipated chemical strike, put on

their protective masks. Commanders specified that certain electronic equipment be disconnected from antennas and power cables to prevent EMP damage. Critical communications and fire control equipment was dug in with overhead cover.

As the battle tempo increased, the 2d and 3d Brigades reported attack by lethal and incapacitating chemicals and heavy artillery fire. The field artillery battalions were beginning to come under heavy artillery fire and chemical attack. The G3 gave a quick synopsis of the situation:

- Nuclear fires must begin in a few minutes. This will require the dedicated use of the bulk of the indirect fire assets available to the division. At full strength, there would be 114 tubes to do this.
- The division is under chemical attack. We should retaliate.
- Our defensive positions are receiving heavy indirect fire.
- Close support fire requests are increasing in the 2d Brigade and 3d Brigade sectors.
- At best we can expect to maintain air parity. Accordingly, a large increase in CAS could not be anticipated.

The division commander established these priorities:

"The first priority is to fire the nuclear pulse as directed by the corps. We must dramatically change the tactical situation.

"The second priority is the counterfire program. This will take the pressure off maneuver and fire support units and degrade the enemy nuclear and chemical capability.

"The third priority is close support."

He further indicated that the corps commander had requested chemical release. Based on the division commander's priorities, the division artillery commander:

- Decided to manage execution of the nuclear pulse himself. This was the most critical task to be performed.
- Tasked the FA brigade to manage counterfire using those weapons not

involved in firing the pulse.

- Directed that brigade and battalion FSO's manage close support fires. FIST's would get close support fires as they were available.

The division artillery commander directed the FA battalions to shift their fires to counterfire and close support when they finished their part of the nuclear pulse. The FSCOORD, FSE, and the NBCE continued refinement of the chemical plan. Working through the ALO and the TACP, the FSCOORD used Air Force reconnaissance aircraft after the package was employed for deeper poststrike damage information. All maneuver and fire support target acquisition means were directed toward determining the enemy's status.

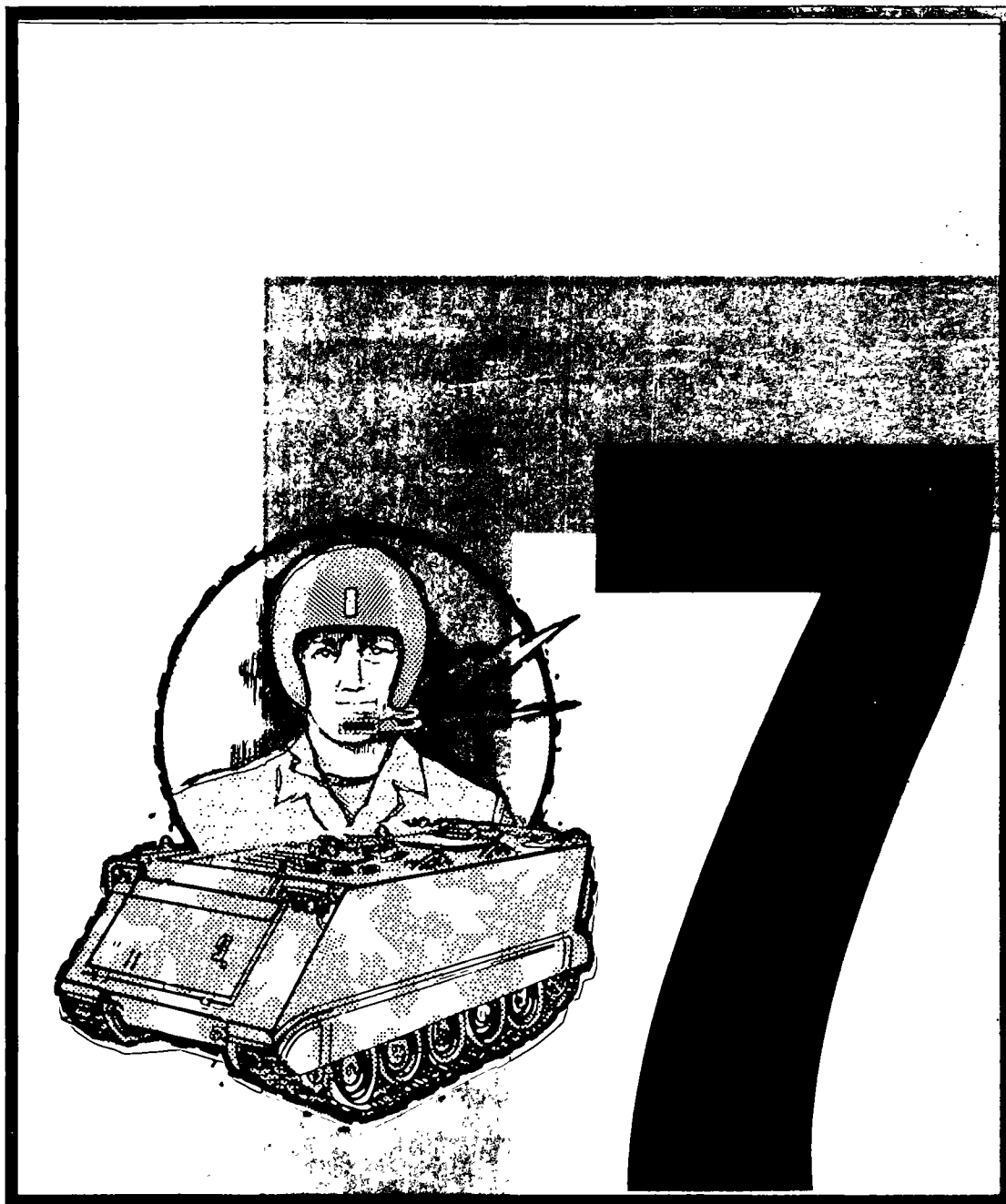
The commander must determine the results of the nuclear strike quickly because:

- He may still not be able to defend successfully; it may be necessary to request and fire another package;
- He may have to react quickly to take advantage of nuclear effects.

6-8. Summary

A broad perspective of the battlefield as presented in the offense, defense, and nuclear and chemical operations chapters of this manual indicates two significant things: 1) Conducting operations in both a nuclear and chemical environment will stretch all the assets available to the commander to the limit; 2) The fire support systems that provide conventional fires will be providing either chemical or nuclear fires, or both.

These facts drive home the absolute criticality for the commander and his FSCOORD to work together continuously from the moment a mission is assigned or assumed until the battle is won.



Training Fire Support Planners and Coordinators

*The Romans are sure of victory—for
their exercises are battles without
bloodshed, and their battles are
bloody exercises.*

— Josephus, 37-100 A.D.

7-1. A Unique Training Challenge

The Army's basic purpose is to win battles. Although we cannot accurately foresee the time or place of battle, we must be prepared to fight a well-armed enemy, superior in number. We cannot rely on a long mobilization or a lengthy war. Rather, we must prepare to react rapidly for intense combat in which there are severe penalties for poor weapon employment. No weapon can be effective unless the man behind it is well motivated and trained. Each of our weapons systems must be skillfully employed by competent tactical leaders. Ultimately the Army's effectiveness will depend on our ability to field powerful weapons in the hands of soldiers proficient in their use and under leaders skilled in their employment.

The role of fire support planners and coordinators is perhaps the most critical aspect of the vital interface between maneuver and fire support units. Yet how to train these planners and coordinators so that the interface works at peak efficiency has always been fuzzy. Who is responsible? How, when, and where should training be done? Artillerymen have long been known for their technical expertise in computing data required to get steel on target. They traditionally achieve high degrees of competence in operating their weapons systems. Standards in fire direction centers and firing batteries must remain high; however, success on the battlefield of today requires more. If the combined arms team is to function as a team, fire support planning

WHY

- At all levels FSCOORD's and their respective sections provide the *vital* link between the fire support system and maneuver elements. High proficiency of these individuals and sections is *essential* to the effectiveness of the combined arms team.

WHAT

- This chapter tells you:
 - how the training management system works;
 - who is responsible for fire support training;
 - what training tools are available;
 - how fire support personnel are trained.

and coordination training must receive a great deal more attention. FSE's are small and often overlooked in training programs. These FSE's consist of officers, NCO's, and soldiers who must train as a team and with maneuver forces if readiness is to be achieved. Fire support planning and coordination demands a great deal of skill, and therefore requires judicious application of training techniques. The effective integration of fire support and maneuver is too important—and too difficult—to assume that it will work by itself. *It will not.*

The critical maneuver fire support interface is further threatened by certain new factors that exist on the battlefield as depicted in FM 100-5. The fire support system could be completely paralyzed unless special attention is given during training to electronic warfare, rapid movement, intelligence, and target prioritization when the fire support system is saturated. Let us examine each in turn.

☐ **Electronic Warfare (EW)**

Extensive military use of the electromagnetic spectrum has added a new dimension to the battlefield. Combat power is of little consequence unless it can be brought to bear *quickly* at the critical place. Accordingly, command and control systems, weapons systems, and acquisition systems are prime EW targets. Communications links between fire support coordinators and firing batteries are delicate at best. Unless adequate preparation is made during training, communication in an EW environment is nearly impossible—especially on a fluid fast-moving battlefield where wire communications will be almost nonexistent. Besides jamming, our units will encounter saturated radio nets—most often in critical areas of the battlefield where units are massed to prevent breakthroughs or initiate counterattacks. The key to coping on the battlefield is dealing

with these problems beforehand—in training exercises planned with imagination and realism.

☐ **Movement**

Execution of a viable active defense and the massing concentration needed for counterattacks require a great deal of skill on the part of all units involved. To fire supporters this means moving often with little notice, it means operating from multiple map sheets, and it means keeping track of friendly unit location to a degree never experienced before. Once again, the solution lies in training. Just as with communications, we must train as we fight if we are to succeed.

☐ **Intelligence**

The hardware, organizations, and procedures being developed for intelligence gathering may actually degrade the effectiveness of the fire support system unless handled properly. Fire supporters must sort out the intelligence data and fire upon the more critical targets. With the new intelligence system, it is possible to become inundated with information. Unless we train to make evaluations promptly and make target attack decisions rapidly, we will be ill-prepared to cope with the "real thing." Intelligence processing has not received much emphasis in the past; however, on today's battlefield we cannot afford to become paralyzed by large volumes of information.

☐ **Target Prioritization and Attack**

In the future, we must be prepared to fight outnumbered—outnumbered in men, weapons systems, and organizations. This means we must make the very best use of what we have. As the tempo of battle increases, our fire support system will become saturated with targets. The practice of shooting all targets in turn must be scrapped.

This will be difficult for veterans of earlier wars where we used a "when in doubt, shoot" policy. The modern battlefield dictates that we use a target priority system. Commanders must establish priorities based on the tactical situation. FSCOORD's and operations officers must insure that targets are attacked accordingly. Weapons systems must be used expeditiously to avoid wasting critical time and valuable ammunition. FIST members should expect to simultaneously employ mortars, field artillery, and TAC air. The key to doing all this under the pressure of combat is to introduce fire supporters to Clausewitz' "Frictions of War," that is anticipated and unexpected problems *before the battle*. The stage for combat must be set over and over again in the training area.

This paragraph has stressed the differences between the battlefield on which we are likely to fight and those of the past. Our training must adapt to this new battlefield. It must not simply deal with gunnery, cannoneers hop, and adjustment of artillery fire. Now we must place equal emphasis on such things as electronic warfare, rapid displacement, massive amounts of intelligence data, and saturation

of target servicing capabilities. Otherwise, the fire support system can be rendered ineffective. The traditional way of training—en masse at a pace equal to that of the slowest learner, with heavy reliance on OJT—will not work. We are training a highly specialized force—the entire fire support team. To make the fire support system work, some new approaches are essential. The remainder of this chapter discusses the training of fire support planners and coordinators.

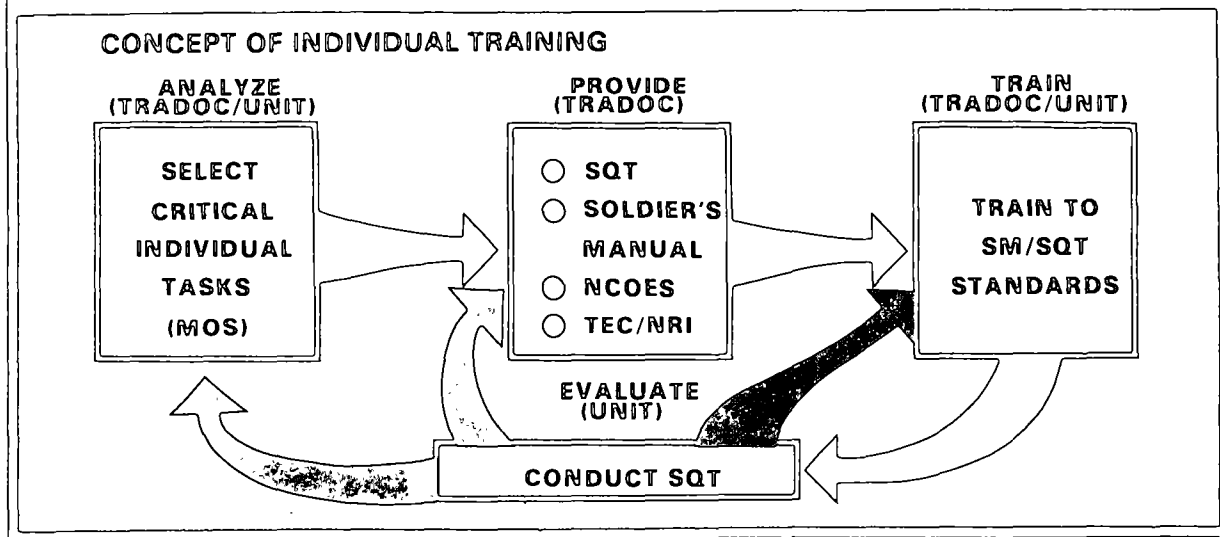
7-2. The Concept of Training

The basic concept for training any soldier has two simple points:

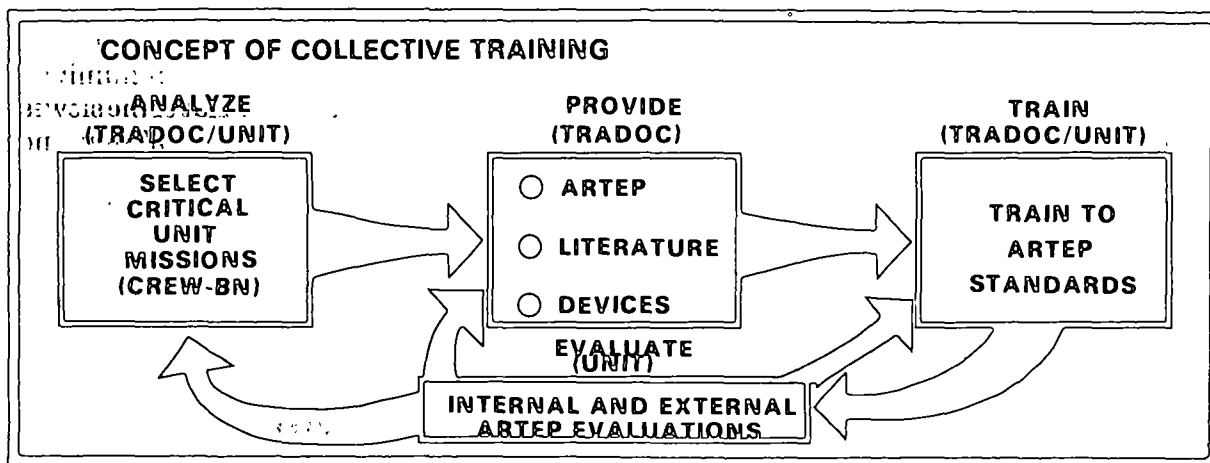
- Define what he should know.
- Give him the resources to train.

The Army training management system, as outlined in TC 21-5-7, *Training Management in Battalions*, is the framework used to accomplish these two points. The training management system is responsive to both individual and collective training requirements. The system is graphically depicted in the two models shown in figure 7-1.

FIGURE 7-1. INDIVIDUAL AND COLLECTIVE TRAINING.



INDIVIDUAL AND COLLECTIVE TRAINING. CONTINUED



Training management is a continuous process to evaluate proficiency, determine training requirements, provide resources, and to train. When a new mission is received, when there are significant personnel changes, when an evaluation reveals additional training is required, unit training must be adjusted.

Individual training for fire support coordination personnel can be difficult. This is caused by the sometimes "orphan," sometimes "forgotten" status of these people buried in larger organizational structures. The solution is decentralization. Fire support officers must impose self-discipline to maintain sufficient up-to-date knowledge and proficiency in their jobs. The officers must insure that NCO's are motivated and stay current. The NCO's must train soldiers in the chain using the soldier's manual that explains what to train at specific standards, and where to find support training material for each task at each level within each MOS. Individual training in units has these characteristics:

- Decentralized to the first line supervisor.
- Tailored for each soldier.
- Self-paced using TEC, correspondence courses, and GED.
- Targeted on job performance and MOS qualification.
- Need not be scheduled, but can take place almost any time and anywhere.

The Army Training and Evaluation Program (ARTEP) is as critical to collective training as the Soldier's Manual is to individual training. The ARTEP states the tasks, conditions, and standards for fire support coordination teams and sections. Each leader must know exactly what his ARTEP tasks are, and be charged with training to accomplish those tasks, under conditions at least as difficult and to the standards prescribed. Besides using the ARTEP to plan training, trainers should use the ARTEP to evaluate and diagnose unit strengths and weaknesses.

When planning decentralized, collective training for the fire support coordination chain, caution must be used. The decentralization concept is valid for collective training, but commanders (training managers) must continually stay in the net. A unit will not become magically well trained just because training responsibility is dumped down to the lowest level. FIST chiefs and FSO's may not have an adequate foundation or the experience to allow them to be totally aware of all the important requirements for training their people. They often need help and clear guidance (training management) to insure emphasis is placed on the appropriate training objectives. This critical judgment can only be given by experienced officers and NCO's. This aspect must be intensively managed since it

changes as often as the people change in a unit.

7-3. Training Responsibilities: Managers and Trainers

Training managers employ resources and develop training programs; trainers prepare and train. They both evaluate training. The

training of fire support planners and coordinators, however, is not quite that simple. Table 7-1 shows where all participants fit into the training scheme—some wear several training hats! FA battalion and division artillery commanders, as FSCoord's, must get actively involved in fire support planning and coordination training.

TABLE 7-1. FIRE SUPPORT TRAINING RESPONSIBILITIES

Pers or Sec to be Trained	FIST Pers	FIST Chief	Mvr Bn and Bde FSE Pers	Mvr Bn and Bde FSO	FA Bn Cdr Div FSE Pers
Trn	FIST Chief	FSO	FSO	FA Bn S3	Asst FSCoord
Tng Mgr	FA Bn Cdr	FA Bn Cdr	FA Bn Cdr	FA Bn Cdr	Div Arty FA Bde Cdr

7-4. Training Tools and Resources

Training managers and trainers of fire support planners/coordinators have several tools at their disposal. The tools are used for analyzing, training, and evaluating, and provide the basis for allocating resources. In our limited-resource environment, making maximum use of the tools is a *must*. We must be well versed in what they offer before training with service ammunition and conducting FTX's. The benefit derived from live fire combined arms exercises will increase *manyfold* if we use these tools to prepare beforehand.

☐ Soldier's Manual (SM)

The SM is a field manual for the individual soldier that defines for him in "real world terms" what the Army requires him to know

and do throughout his career in his MOS. SM's provide individual tasks, conditions, standards, and the references that apply. For example, each soldier assigned to a FIST will receive an SM that tells him what he must know and do for his particular skill level in MOS 13F. The following example is taken from page 3-2 of the 13F SM for skill level 1:

An RTO assigned to a FIST or bn/bde fire support section

must know

how to establish and maintain commo with mvr elements, FS delivery agencies, and FS coordinating agencies.

The SM tells him how to do this at company team, mvr bn, and mvr bde levels, and that FM 6-20 is a key reference.

□ Commander's Manual (CM)

The CM provides a complete list of critical tasks for each MOS from skill level 1 to 4. The list identifies tasks, gives references, and indicates where a soldier is trained for the task. CM's are an invaluable aid for both trainers and managers.

For example, the CM for MOS 13F lists the "Establish Commo" task discussed above as a critical task; lists all FM's, TC's, and TEC lessons that apply; and indicates that soldiers initially receive this training in AIT. Further, it shows where refresher training is conducted.

□ Skill Qualification Test (SQT)

The SQT determines the soldier's proficiency at his current skill level and his qualifications for advancement to the next higher skill level. The SQT emphasizes hands-on performance rather than written tests. Using SQT results, the training manager and trainer can determine individual training weaknesses.

□ Training Extension Courses (TEC)

TEC lessons train soldiers in common, branch-related, or MOS-related subjects. They allow soldiers to study alone, at individual speed, or with a group who have the same training needs.

For example, the soldier can brush up on the "Establish Commo" task discussed above by looking at TEC Lessons 936-061-0108-F through 936-061-0114-F.

With TEC, soldiers—as well as NCO's and officers—can study those lessons and develop proficiency in a particular area. All TEC lessons are provided to units by direct distribution.

□ Army Training and Evaluation Programs (ARTEP)

ARTEP's are geared toward section or unit training rather than individual training. They are not merely substitutes for ATP's,

ATT's, or ORTT's. They are not tests to pass or fail. There is no inherent requirement for an annual formal evaluation. However, this may be directed by a particular commander. FA ARTEP's are the *primary* diagnostic training tools for battery, battalion, and division artillery (div arty) fire support coordination training. They are blueprints used to identify shortcomings, structure training, and monitor and evaluate progress.

TRAINING TIP

The new user of the FA battalion ARTEP should immediately distinguish between section outlines (e.g., bn/bde fire support section) and major mission operation outlines (e.g., battalion fire support coordination).

Section outlines include tasks that individual sections can use to train—usually *independently*.

Major mission outlines include tasks for the entire unit (e.g., the battalion).

Brigade and battalion fire support sections should be able to plan and coordinate fire support for maneuver battalions or brigades in the defense—under the conditions and to the standards set forth in ARTEP 6-365, *FA Battalions, 155-mm, DS*.

The ARTEP provides the means of evaluating unit proficiency according to specific combat mission-related, performance-oriented training objectives. When performance is evaluated, training weaknesses are isolated and training managers develop training programs to correct deficiencies. Evaluation is

continuous, and this "closed loop" process is critical to maintaining a stable, high level of readiness. *Training emphasis must be placed on informal evaluations on a continuous, day-to-day basis—not on formal annual testing at predetermined dates.*

The importance of continuous training that maintains fighting proficiency cannot be overemphasized. Tests have proved that the average battalion will degrade in training proficiency by at least 25 percent within 3 months after a major training exercise—unless collective skills are maintained in garrison and local training areas. A battalion at 75 percent proficiency will most likely be unable to adequately perform its combat mission.

☐ **Service School Instructional Material**

USAFAS publishes two catalogs that contain training material on fire support subjects that pertain to both maneuver and field artillery personnel.

Significant aspects of the FA Catalog of Instructional Material:

- ☐ There is a series of available individual, section, staff, unit, or MOS-related courses. Subject matter includes communications and electronics, counterfire, gunnery, tactics and combined arms, and weapons.
- ☐ There is a series of programed texts on specific subjects; for example, map reading, observed fire procedures, and offensive and defensive maneuvers that can be used to supplement training.
- ☐ There are approximately 200 "How To" TV tapes available that discuss, for example, adjustment of FA and mortar fire, RTO procedures, and FA tactical missions.

Significant aspect of the Correspondence Course Catalog:

- ☐ Professional development courses are available for officers and NCO's. These include the officers basic and advanced courses, nuclear target analysis, NCO cannon and missile basic and advanced courses, and various specialty courses.

☐ **Training Aids Services Office (TASO)**

TASO can provide the training manager and the trainer all types of audiovisual aids, graphic training aids, training devices, training room support items, and training equipment. For example, gridded templates can be obtained from TASO. Each TASO publishes a catalog that tells what is available and how to get it.

☐ **Devices and Simulators**

Simulators and devices augment training. Use of full TOE equipment and live firing is desirable but not always possible. Available training areas, ammunition shortages, and monetary constraints force the commander to other alternatives. Simulators and devices can replace some live fire field training, compensate for constraints, and supplement available live training periods. The training manager/trainer determines the best mix of live training and simulation.

The M31 (14.5-mm) field artillery trainer provides realistic training for fire direction teams, forward observers, gun crews, and survey teams in limited space and at low cost. The M31 is effective for diagnosing training weaknesses and developing teamwork and technical proficiency *before* firing service ammunition.

☐ **Wargames**

While they are maneuver-oriented, wargames do provide the commander and his FSCOORD an excellent opportunity to train together. Used with CPX's, FTX's, or by one commander and his FSCOORD against another commander and his FSCOORD, wargaming can realistically exercise the techniques of integrating maneuver and fire support. The complete spectrum of command and control procedures can be practiced, which significantly enhances combined arms training. These wargames are available as shown in table 7-2.

TABLE 7-2. AVAILABLE WARGAMES

Title	Level of Play	Scenario	Training Objectives
Firefight	US Platoon vs Opponent Company	Free tactical play in European setting/ terrain.	Trains platoon leaders and FIST members to: 1. Use long range direct and indirect fire weapons. 2. Use terrain properly. 3. Use suppression and smoke 4. Fight the combined arms team.
Dunn-Kempf	US Company Team vs Opponent Motorized Rifle Battalion	1. Free tactical play. 2. Players choice of offense or defense. 3. Terrain is rolling with vegetation.	Trains company team leaders and FIST members to: 1. Apply small unit tactics. 2. Apply maneuver and fire support techniques. 3. Use terrain properly. 4. Employ the weapon systems available to the company. 5. Develop hasty fire plans and use suppression and massed fires.
Longthrust	US Battalion vs Opponent Reconnaissance Battalion	Free tactical play for the attack or defense in European setting.	Trains task force command group and FSO to: 1. Use time/distance factors. 2. Use terrain properly. 3. Employ direct and indirect fire weapon systems. 4. Use command and control procedures. 5. Develop fire plans and coordinate fires.

TABLE 7-2. AVAILABLE WARGAMES—CONTINUED

Title	Level of Play	Scenario	Training Objectives
Computer Assisted Map Maneuver Systems (CAMMS)	US Brigade or Battalion vs Opponent Division or Regiment	Free tactical play on any terrain for inf, mech, cav, or armor offense or defense operations.	Trains task force and brigade command groups and FSO's to: 1. Use command and control techniques. 2. Fight various tactical scenarios. 3. Coordinate and control the combined arms team. 4. Plan and coordinate direct and indirect fires. 5. Apply administrative and logistic support to combat operations.
Pegasus	US Brigade vs Opponent Motorized Rifle Regiment	Free tactical play on rolling terrain.	Trains the brigade command group and FSO to: 1. Use proper command and control procedures. 2. Understand time/distance factors. 3. Plan fires and integrate fire support with maneuver.
First Battle	US Mech/AR Division vs Opponent Tank Army	Free tactical play involving a division defense along German border against Opponent Tank Army.	Trains division command and FSCoord to: 1. Coordinate and control combined arms operations. 2. Employ the critical time/distance decisionmaking process. 3. Use fire support planning and coordination.

Other devices and simulators will be available in the future. They are described in chapter 8.

A recent Armywide survey indicated that no matter how the question "What can provide a remedy for problems of motivation, morale, and job satisfaction for you (the soldier)?" was asked, the overwhelming mandate was "Give us Meaningful Training!" The tools that were addressed in this paragraph are provided to meet this mandate.

In no other profession are the penalties for employing untrained personnel so appalling or so irrevocable as in the military.

— GEN Douglas MacArthur, 1933

7-5. The FIST Chief as the Trainer

The FIST chief is the full-time trainer of his team. His responsibilities include both the individual and collective training of that team. As the trainer of his team, it is essential that the FIST chief have a complete understanding of how to use the training tools available.

For example, assume that a FIST chief has determined that his FO's need training in locating targets within required standards of accuracy. This was determined by their performance on recent FTX's and an analysis of the results of this task on their SQT's (skill qualification test). Aware that accurate location of targets is a critical task that affects the efficiency of his team's mission, the FIST chief realizes the importance of designing a training plan to solve his problem.

The FIST chief is already well into the four-step training management process as outlined in figure 7-1. He has evaluated the state of training of his FO's in a particular area and is presently analyzing a solution for it.

Using the unit ARTEP (e.g., ARTEP 6-365) he turns to the tasks for the FO section. There is a listing of the critical tasks required of an FO in combat. Task 2 is locating targets. The conditions under which the task is performed and the specific standard required are also listed. The FIST chief knows that all adjustment of fire tasks carry with them the implicit task of locating targets to the proper standard. Furthermore, the fire mission times in the field artillery and/or battalion delivery of fires sections are dependent on the standard for locating targets being met.

Using FM 6-13F 1/2, the Soldier's Manual for MOS 13F, the FIST chief finds that tasks 061-13F-1502 through 061-13F-1504 state the three methods of locating a target: how to train to do them, the required standards, and needed references for detailed information on each task. If a Soldier's Manual is not available, then the FIST chief might check the Commander's Manual, FM 6-13F CM. This contains a listing of tasks, references, and responsibility/location for initial training for a task.

Either of these sources will mention, as additional references, TEC lessons 949-0610001-F through 949-061-0003-F and specific chapters in FM 6-40.

For they had learned that true safety was to be found in long previous training, and not in eloquent exhortation uttered when they were going into action.

— Thucydides, 418 BC

The trainer has a variety of devices/simulators (e.g., M31 trainer), service school instructional material, and items TASO can provide (e.g., gridded templates) to assist him in training.

A sample training plan that the FIST chief might use is shown below.

Subject	Personnel
Read, understand, and know the tasks in ARTEP, SM, and SQT.	team
Do TEC Lessons 949-061-0001 (0007, 0003)-F.	individual
Do a map/terrain association exercise.	team
Read, discuss, and understand chapter 8, FM 6-40; and chapters 4 and 5, FM 6-40-5.	team
Study and work problems available from service school instruction.	individual
Do a map/terrain association exercise.	team
Fire with the M31 trainer.	team
FTX.	team

Completing the training management circle, the DS battalion commander, as the training manager, provides the necessary equipment, references, time, guidance, and assistance. The FIST chief then vigorously trains his team. When his training is completed, he reevaluates the team's skill in locating targets and modifies the training as necessary.

7-6. The FSCOORD and the Maneuver Commander

The training that fire support personnel must do goes beyond developing the mere technical ability to perform such tasks as constructing overlays, planning targets, and

coordinating fires. Fire support personnel must learn to work with maneuver elements, and maneuver commanders must be trained to consider fire support at all times in their planning process. This is a team effort undertaken in the spirit of cooperation.

The following discussion will cover the FSCOORD and his commander at the company team, task force, brigade, and division. The purpose is to suggest methods for training the users and operators of the fire support system that will ultimately improve combat effectiveness and readiness. All FSCOORD's, regardless of their level, apply the same fire support planning and coordination principles. Their contribution, integrated with maneuver, is what generates combat power.

There are two categories of training involving the FSCOORD.

□ **Technical** (covered earlier), which means proficiency in fire support procedures and techniques—the FIST can adjust fires, or the FSO can develop a fire support plan.

□ **Tactical** (coordination), which means proficiency in providing the right fire support system or systems, and working with maneuver to integrate fire support with the action on the ground.

It is not sufficient for the FSCOORD to be only technically proficient. He must develop the interpersonal relationships with the commander, his staff, and the representatives from all fire support systems to make fire support an integral part of combat power. The FSCOORD cannot do this without the cooperation and understanding of the maneuver commander.

□ The FIST Chief and Company Team Commander

The relationship established between the FIST chief and his company team commander is one of the most critical on the battlefield. It is at this level that both direct and indirect fires are placed on the opponent. The FIST is the "business end" of close support for maneuver. Training for this

begins with the FIST always being with the company team during their training. The FIST chief insures that this happens—the company team commander insists on it.

The FIST chief is the trainer for his team. The battalion Cdr is his training manager. As the trainer, the FIST chief insures the individual and collective proficiency of the team. To provide both technical and tactical proficiency for the individual soldier, he uses the critical tasks in Soldier's Manual 6-13F. For a guide to collective training he uses the ARTEP. The principal issues of this chapter revolve around the ARTEP critical tasks that combine the collective training requirements for integrating fire support and maneuver—tactical (coordination) proficiency.

FIST Critical Training Tasks. The following are representative tasks taken from ARTEP 6-365, *FA Battalions, 155-mm, DS*:

- Conduct immediate smoke and suppression missions.
- Adjust two fire missions simultaneously.
- Request and adjust immediate or planned CAS.
- Plan and coordinate close support for the company team in the offense and defense.
- Advise the commander on employment of fire support weapons systems.
- Determine the best fire support means to employ against a target.

Training. The first two critical tasks are ones that the FIST chief can train his team to proficiency on without interface with maneuver being mandatory. The earlier example of the FIST chief training his FO's to locate targets is a proper approach to these tasks. However, to perform the last four tasks the FIST must train with the commander, maneuver platoon leaders, mortar platoon leader, and other fire support means representatives as available. There are four fundamental ways to conduct meaningful training with all of these personnel: wargames, CPX's, TEWT's, and FTX's.

Wargames can be used to plan and prepare for CPX's and FTX's. This allows mistakes without wasting valuable training dollars and time in the field. The results can

be measured in terms of the relationships, confidence, and mutual cooperation between the FIST, the attack helicopter platoon leader, CAS and naval personnel, the mortar platoon leader, and the company team commander.

The Dunn-Kempff wargame is a good way to get all members of the team technically and tactically proficient. This is done without the expense of live firing and on-the-ground maneuver. All FIST fire support planning and coordination critical ARTEP tasks can be exercised. For example, during the wargame the company team commander requests advice for employing fire support weapons systems for a defensive operation. To perform this task, the FIST chief must know:

- weapon availability,
- who to coordinate with to get fires,
- the suitability of a weapon to attack a target, and
- how to combine the effects of multiple systems employed on the same target.

Coordination with FSO's and FDC's can be done through normal tactical communications established as part of the game play. Mortar availability is determined from the mortar platoon leader, either face-to-face or through tactical communications. CAS and attack helicopter support can also be simulated. Combining the maneuver and fire support ARTEP critical tasks in a hard hitting, two-sided wargame played against an actual or anticipated situation is an excellent way for the fire support and maneuver team members to:

- learn the critical combat tasks required for both,
- determine how each interacts with the other, and
- develop the coordination required to fight as a team.

Using the Firefight wargame, the FIST chief and a maneuver platoon leader could engage another platoon leader and a FIST member to determine how best to make a platoon attack integrated with the fire support available to the company team. This

would give both platoon leaders the opportunity to integrate fire support into their operation and give the FIST the opportunity to become familiar with platoon tactics and how the platoon leaders operate.

CPX's might be the next step in this training process. They are used to refine the command, control, and communications procedures. These exercises offer a realistic interchange between all the maneuver and fire support personnel mentioned above with the problems inherent in a tactical environment (time-distance problems and communications problems). The CPX is an effective vehicle to teach the commander and his staff how to operate together without using troops as their training aids. While wargames could be an integral part of these exercises, the CPX is better because the FSO can use his real equipment and interact with the proper personnel in a tactical configuration.

TEWT's (Tactical Exercises Without Troops) represent a progression from CPX's and are excellent preludes to FTX's. During a TEWT, the disposition and movement of simulated troops and units are planned and discussed on a particular piece of ground. In many respects, a TEWT is a "skeleton FTX" used to train combined arms groups of maneuver and fire support leaders to make decisions based upon their analysis of the terrain, the unit mission, and the opponent situation. On foot or in vehicles, the leaders at virtually any echelon—from crew/squad through battalion/task force and higher—can be trained extensively in command, control, and communications procedures; consideration of time-distance factors; terrain analysis and navigation; reconnaissance, selection, and organization of positions; issuing orders; and thinking through tactical estimates, troop leading procedures, and fire support planning and coordination requirements.

A TEWT is relatively easy to prepare and can be exercised over almost any type of terrain. It can be conducted during prime time training or while the soldiers and junior

leaders are involved in individual training or performing maintenance. A decided advantage of the TEWT is that it can be done in a local training area; and the absence of troops during the exercise permits a great deal more time for training maneuver and fire support leaders while being less demanding than an FTX in terms of resources required.

FTX's should start where wargaming, CPX's, and TEWT's leave off. This is the opportunity for the commander to use the ARTEP to evaluate proficiency and determine what weak areas still exist. Problem areas discovered on the FTX can be resolved back in garrison or in the field using a wargame and CPX or a TEWT to refine techniques and coordination skills that were identified as weak.

The FTX offers the same valuable teaching points as a CPX or a TEWT, but the FTX intensifies the "sense of urgency" because of the presence of troops and live ammunition. The FTX is a most effective way to train the combined arms team.

The DS battalion commander, the FIST training manager, must informally evaluate these training sessions. He will provide specific training objectives and guidance to the FIST chief. He may provide recommendations to the company team commander on the better integration of fire support and maneuver and recommendations to the task force commander regarding the integration of the company wargames with battalion gaming. This will provide both commanders and their FSCOORD's the opportunity to see the total team in action. This can all be done in an area the size of an average dayroom.

☐ **The FSO and the Maneuver Commander**

The FSO, as the FSCOORD at battalion and brigade, contributes to the close support fires provided by the FIST and adds to the battle the aspects of counterfire and suppression of enemy air defenses. He is the commander's fire support adviser, and he

plans and coordinates all the fire support available to the command. He uses the ARTEP and Soldier's Manual 6-13F as the basis for his training. The battalion FSO is the trainer for his section, and the brigade FSO is the trainer for his. The DS battalion commander manages their training.

FSO Critical Training Tasks. The following are representative tasks from ARTEP 6-365:

- Plan and coordinate fire support for the offense and defense.
- Coordinate all fire support on surface targets.
- Plan and coordinate CAS and naval gunfire.
- Advise the commander on all friendly and enemy fire support capabilities.
- Advise the commander on target acquisition matters.

Training. The FSO has the dual responsibilities of training his section in their specific duties and training the section to interact with maneuver in its combat mission. The handling of the first responsibility is similar to the earlier example of the FIST chief and his FO's. However, to fulfill the second responsibility, the FSO must train with the maneuver commander, his staff, and representatives from all fire support weapons systems. Basically the four ways to conduct constructive training, as for the FIST chief, are wargames, CPX's, TEWT's, and FTX's.

Wargames include the Longthrust wargame that provides all the team members the capability to exercise a tactical scenario in real time with a high degree of resolution. All of the critical training tasks required of the FSO can be played. For example, if the task force commander requested advice on how to plan targets for a hasty attack, the FSO would base his answer on coordination with:

- his FIST chiefs;
- the brigade FSO;
- the task force S2, S3, and S3 air;
- the DS battalion FDC; and

- the ALO.

As for the FIST, the main issue in the task force wargaming sequence is to assemble all the team players, either face-to-face or through normal communications, and exercise combat tasks. This relationship allows the FSO to coordinate with the ALO in the same way he would in combat. He learns firsthand how to integrate CAS into the scheme of maneuver.

To lead an untrained people to war is to throw them away.

— Confucius, 500 BC

To further enhance realistic training, the commander can require the company teams to wargame concurrently with a Dunn-Kempf exercise and feed data into the task force scenario.

CAMMS can be used to train both the battalion and brigade staffs. The brigade FSO, however, has a larger arena to consider. In the defense, for example, the brigade FSO's training would include coordination with:

- his task force FSO's,
- the brigade S2/S3 and S3 air,
- the S3 in the division artillery TOC,
- the DS battalion commander,
- the S3 in the DS bn FDC, and
- the ALO.

The significance of the relationship between the brigade commander and his FSO cannot be overstressed. Brigade is where the battle will be fought. Accordingly, the wargaming part of developing the commander's estimate—enhanced by Longthrust and CAMMS—can insert the real time, real units, and real opponent factors into selecting the appropriate course of

action. For example, the tactical scenario discussed in chapter 3 could provide the basis for a wargame scenario in which the commander and FSCOORD could see the results of their various courses of action. Once a course of action is selected, it would be played again to determine possible contingencies that could develop and to prepare for them.

The Pegasus wargame is another excellent way for the brigade commander to train his command group and the FSO. For example, the capability to provide the command and control required to execute a counterattack could be exercised. Step by step, the fire support requirements could be integrated with the tactical flow of the battle.

CPX's or TEWT's is where the FSO can really test his skills and SOP's. The minute-by-minute interface in a tactical setting with the actual officer (not stand-ins) who perform the duties is an intangible training achievement not accomplished by wargames. CPX's should be the primary vehicle through which an FSO practices the skills he has learned.

FTX's are a desirable way to train FSO's with maneuver. However, the dollar constraints limit the amount of available resources. Therefore the FTX will only be used occasionally to culminate or tie together certain concepts or operations already refined in wargames or CPX's.

☐ **The Div Arty Commander/ FSCOORD and the Division Commander**

The div arty commander is the hub for fire support in the division. His mission is to insure that the division has the fire support required to fight the battle. His principal agencies that discharge this mission are:

- ☐ division FSE,
- ☐ div arty TOC,
- ☐ FA brigade commanders,
- ☐ FA battalion commanders,
- ☐ FSO's, and the
- ☐ TAB commander.

The critical tasks to train himself and these agencies are in ARTEP 6-302, *Division Artillery Headquarters and Headquarters Battery*, and ARTEP 6-307, *FA Target Acquisition Battery*. The spectrum of requirements ranges from providing fire support and counterfire to suppressing enemy air defense weapons. The capability of the div arty commander to manage this process effectively requires constant training of his organic assets with the various division staff sections and the corps FSE. The div arty relies on significant input and interaction between organic agencies and the maneuver staff to perform the training and combat mission.

For example, based on the example in chapter 6, the div arty commander could organize a CPX to practice nuclear subpackage planning, a critical ARTEP task. Participants could include representatives from G2/G3 operations, all-source intelligence center, NBCE, and the TACP. The FSE could be the executive agent for the exercise, drawing the subpackage planning together from the participating division players and from information provided by the div arty TOC, brigade FSO's, and DS battalion commanders. This same procedure could be used for chemical and conventional critical tasks fire planning.

The div arty commander can provide significant input to the brigade wargaming exercises. The information flow between the FSO and the div arty TOC would add realism and exercise the two primary agencies responsible for supporting the brigade commander. Division could provide G2/G3 representation along with all-source intelligence and Air Force participation. This would allow the brigade staff to wargame, working with the principal participants that would function together in an FTX or combat. This is a workable procedure for training or developing and testing operational plans.

When the division commander exercises the First Battle wargame, the div arty commander is a key player. For example,

continuing with the nuclear scenario, the commander can cause his staff to develop situations where critical defense situations can occur. The coordination required to make decisions on the proper course of wargaming greatly contributes to the development of actual contingency plans. Involving himself in this type of training provides the div arty commander with some significant insights. This is particularly true if applied to each of the critical ARTEP tasks and if all the personnel and agencies that contribute to the task are exercised together. As the division artillery training manager, he can:

- evaluate the training status of his command;
- determine specific training objectives for the various units and elements in his command;
- provide the time, people, area, and equipment to facilitate training; and
- stay abreast of his command's training status to identify weaknesses as they occur.

A significant factor the div arty commander has at his disposal is surprise—the proper reaction to surprise is one of the combat realities that training must strive to achieve. For example, the div arty commander could direct the DS commanders to have their FIST's report to selected positions with all equipment and ready to observe by a certain time. Some of this could be done at the M31 range. The FSO's would be given similar orders. If company team and task force representation could be provided, this would enhance the value of the training. In fact, a maneuver scenario should drive the training. FDC and div arty TOC communications would be established. With about 40 of his people, the div arty commander can informally evaluate the performance of his:

- 3 brigade FSO's,
- 9 battalion FSO's, and
- 27 FIST's.

This can be done in local training areas without live fire using ARTEP and Soldier's Manual critical tasks and standards. This is

performance-oriented training exercising command and leadership at all levels.

There are any number of combinations the div arty commander may use to train the FSCoord team. They range from full-scale FTX's to a few key members playing a wargame. Whatever the technique, it must include close cooperation with maneuver and the result must be the same—combat readiness. Any commander must look for and make training time available. A lot can be done in little time. For example, in an hour the FIST members can fire several missions using the M31 trainer. The FIST chief can perform terrain analysis with his company commander and, based on an assumed threat, prepare a hasty fire plan. A battalion FSO can provide a tactical situation to his FIST chiefs and require them to prepare a plan to support it. The brigade FSO can do the same thing with his battalion FSO's.

Perhaps the greatest challenge for the training manager and the trainer is to develop training that closely approximates how a unit or individual will operate in combat. For example, in rifle marksmanship training, the tendency is to require soldiers to fire at pop-up targets that will appear for 10 to 12 seconds perpendicular to the line of fire. The facts of combat are that over 90 percent of all targets detected by infantrymen on the battlefield move at an angle to the firer. This is a much more difficult target to hit. Also the average combat target exposure time tends to be about 6 seconds rather than 10 or 12 seconds. *The soldier that is trained to fire his rifle at targets that are perpendicular to him, exposed for 10 to 12 seconds, is not prepared for what he will encounter in combat.*

□ Fire Support/Maneuver Training Summary

Recognizing that maximum value must be obtained from limited resources, emphasis in training should be placed in training skills with inexpensive devices and exercising skills in realistic environments. The devices and techniques discussed here can be used to provide increasingly more sophisticated

training at all levels. The start point is individual training based upon Soldier's Manuals followed by collective training of sections and units using ARTEP tasks. While this is being accomplished, staffs, staff sections, and commanders can refine skills using wargames and CPX's.

CPX's can be expanded upon in nonshooting FTX's or TEWT's. This entire program can then be integrated, at the appropriate time with live fire, scenario-oriented field exercises where all of the skills are brought together in a manner that provides maximum realism. A program such as this takes advantage of relatively inexpensive training techniques and develops skills while the bulk of training ammunition and funds are reserved for use in live fire exercises used to reinforce training.

7-7. Summary

How the training manager develops realistic, flexible, responsive, and continuous training—dynamic training that makes individuals and units proficient and keeps them there—has been discussed. Specific individual and unit combat tasks and standards have been developed to provide an objective basis for analyzing and evaluating training. These represent clearly defined training objectives that minimize the subjectivity in training evaluations. But training still contains an element of subjectivity in the sense that total training readiness defies strict quantification. Readiness is not a pure statistical exercise because *only the commander* really knows when his unit is trained and ready to fight. It is easy to quantify AWOL's, reenlistments, and maintenance. This is the "statistic snake pit" many commanders have fallen into because they do not understand the proper proportion of objective and subjective elements in training and readiness evaluation.

A great deal of training effectiveness depends upon the proper environment and

atmosphere. The entire command must have a spirit of close teamwork—if the commander does not demand well-trained units based upon training as the top priority, subordinates have little chance to develop their organizations along well-trained lines. Time, imagination, and energy must be devoted to the critical training aspects that save lives and win wars.

Many soldiers are disappointed by our failure to place *real* demands on them. They want the Army tougher and challenging. This means keeping standards high—paying the price for improved professionalism. A small Army demands it. The professional development of junior officers and NCO's at the unit level is central to all training plans. *Allow junior leaders to make mistakes.* Demand that they:

- ☐ pursue excellence,
- ☐ experiment,
- ☐ exercise initiative,
- ☐ be innovative, and
- ☐ try new approaches.

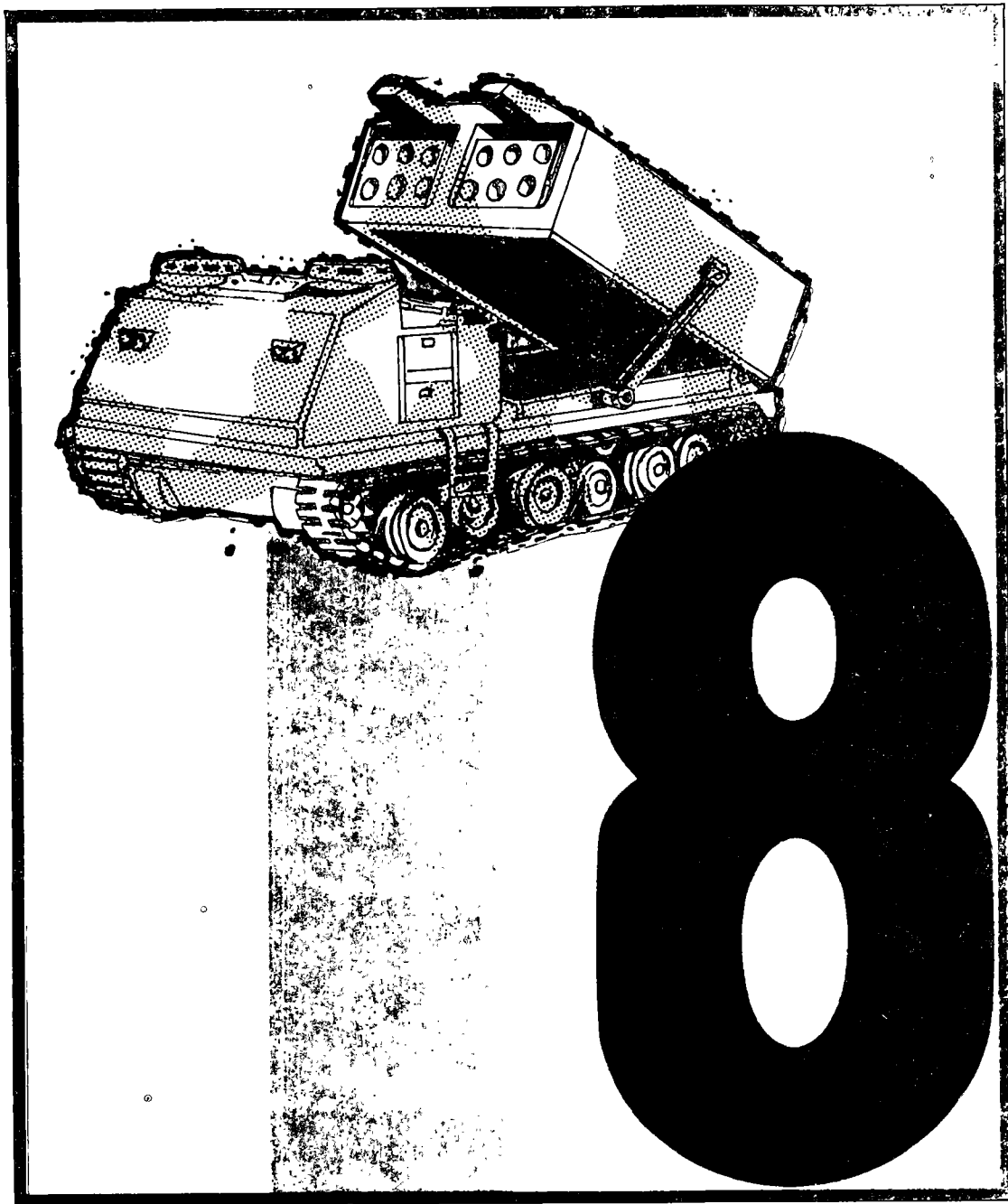
The test of battle is *execution*—and that is our training mission.

The best form of "welfare" for the troops is first-class training.

**— Erwin Rommel:
*Rommel Papers, ix, 1953***

Forthcoming equipment is discussed in chapter 8. Read this chapter:

- ☐ To gain an appreciation of how the combat power of the fire support system—but more important, the combined arms team—will be improved.
- ☐ To recognize the training implications that will emerge—new simulators, devices, and training media are being developed to accompany the equipment accessions.



Future Developments

A superiority of fire, and therefore a superiority in directing and delivering fire and in making use of fire, will become the main factors upon which the efficiency of a force will depend.
—Ferdinand Foch, 1919

8-1. Firepower

The armored and motorized forces of our potential adversaries far outnumber our own forces. Their equipment was proved in the 1973 Arab-Israeli war to be far more lethal and sophisticated than any we have faced in past wars. In the event of war we must be able to hold firm against the masses of men and equipment we will face—not with more men and small weapons, but with *firepower*.

Firepower—and ultimately combat power—is in large part a function of the capabilities of our weapons systems. Hardware items projected to enter the inventory in the next few years will significantly increase our combat power.

WHY

- Maneuver and FA commanders require an appreciation for how new materiel developments will improve the responsiveness, accuracy, lethality, and mass capability of the fire support system.

WHAT

- This chapter discusses:
 - Firepower in modern combat.
- The automated fire support planning and coordinating capability.
 - New target acquisition hardware.
 - Increased observer effectiveness.
 - Faster, more deadly fires.
 - Training devices.

8-2. Improved Fire Support Planning and Coordination Capability

To plan and coordinate fires, it is essential that all available information be processed with speed, accuracy, and completeness. The tactical fire direction system (TACFIRE) is a computerized fire support command and control system being introduced in the early 1980's to assist commanders in bringing the full potential of fire support to bear. From company to division TACFIRE represents a dramatic advance in the FSCoord's capability to plan and coordinate fires. TACFIRE will:

- Enhance control by fast and secure communications. Messages are digitized,

encrypted if required, transmitted over normal FM nets, and decrypted and displayed at the desired destination. Digital traffic also reduces vulnerability to ECM.

- Store and update target intelligence so that the most current data are available for printout, application, or transmission to another fire support or maneuver element.

- In accordance with the commander's priorities, automatically provide recommendations for attack, volume of fire, and munitions. All FA, naval, CAS, and missile weapons systems are considered.

- Provide nonnuclear, nuclear, and chemical target analysis and fire plans.

- Enhance fire support coordination by automatically considering fire support coordinating measures.

For more information about TACFIRE see appendix K.

8-3. Improvements in Target Acquisition

The imperative to *see the battlefield* is set forth clearly in earlier chapters of this manual and in FM 100-5 and FM 71-2. It is fundamental to both offense and defense. The full value of long range fire support means is degraded if we cannot find and locate targets for them. This pressing need for seeing the battlefield has made target acquisition devices high priority developmental items.

□ Mortar and Artillery Locating Radars

The mortar locating radar, AN/TPQ-36, and the artillery locating radar, AN/TPQ-37, emphasize single-round target locations and simultaneous processing of multiple targets. The Q-36 ranges out to 15 km and the Q-37 out to 35 km. Both transmit target locations to TACFIRE so that counterfires can be on the way in less than a minute. The radars will be issued to div arty TAB's and DS battalions of separate brigades by 1980.

□ Moving Target Radar

A moving target radar that can locate targets at ranges of 30 km is being developed for div arty. It features better ECCM capabilities and mounts in an M113 armored personnel carrier. It is planned for fielding between 1982 and 1986.

□ Remotely Piloted Vehicle (RPV)

The RPV is a remotely-piloted airborne reconnaissance, surveillance, and target acquisition device being developed to support committed maneuver brigades and the division. RPV's will provide timely and accurate intelligence and targets from possibly 50 km behind enemy lines. Current projections include a laser-designator capability for attack in conjunction with the cannon launched guided projectile (CLGP), CAS, and HELLFIRE.

□ Sound Ranging Equipment

Sound ranging capabilities will be enhanced significantly by the introduction of the AN/TNS-10 sound set. This new sound ranging set is a transistorized product improvement of the AN/GR-8. In addition, the AN/GRA-114 radio data link will eliminate the requirement for laying and maintaining wire lines from microphones to the sound central. Fielding of the AN/TNS-10 and the AN/GRA-114 will increase the reliability of the sound ranging system while decreasing greatly the time required for installation.

□ Photolocator

The photolocator is a computerized optical-mechanical system designed to establish grid coordinates and altitude of selected points using aerial photographs. It can be used to locate targets and extend survey control deep in enemy rear areas. The photolocator is accurate to within 10-20 meters and will be available at division and corps artillery by 1980. A proposed improvement features more rapid target location using TV images.

☐ **US Air Force Target Acquisition Developments**

Devices scheduled for fielding between 1976 and 1984 will provide a tremendous increase in the target acquiring capability of the fire support system.

- ☐ The precision locator strike system (PLSS) places an electronic grid over the battlefield that helps locate targets and provides control for strike aircraft or bombs.

- ☐ Pave Tack is a pod-mounted laser designator that incorporates imaging infrared as an acquisition device.

- ☐ Pave Penny is a pod-mounted laser spot seeker that allows aircraft not equipped with laser designators to acquire and strike targets designated by other means (e.g., other aircraft or ground laser locator designator (GLLD)).

- ☐ Multilateration radar (MLR) will provide a significant increase in the Air Force's ability to detect ground targets.

- ☐ RF-4C quick strike reconnaissance (QSR) aircraft will transmit ground sensor detections to a tactical air control center, combat information center, or accompanying strike flight.

8-4. Observer Effectiveness: Radical Improvements

Testing has established that a major portion of the fire support delivery error is attributable to observers. The mobility factor in modern combat further complicates the problem—both observer and target will be moving frequently making target acquisition, location, and attack difficult. Materiel that will be available in the near future will drastically reduce observer error and greatly improve responsiveness.

☐ **Digital Message Device (DMD)**

The DMD is a device that sends and receives messages digitally using existing FM radios. It is a handheld, battery-powered unit that can send calls for fire, fire planning

targets, friendly unit locations, intelligence reports, or plain text messages. It will significantly increase responsiveness. It is being fielded as part of TACFIRE.

☐ **Laser Rangefinders and Designators**

- ☐ The battery-powered AN/GVS-5 laser rangefinder is held and sighted like a large pair of binoculars. The operator looks through a single 7 × 50-mm eyepiece to locate and range targets. Distance is displayed in meters. By ranging the initial adjusting round, an observer provides instant feedback to FDC's through the DMD, "closing the loop" and facilitating rapid massed fire-for-effect.

- ☐ The vehicular or ground laser locator designator (V/GLLD) and its ancillary equipment are configured to provide distance, direction, and vertical angle as well as laser illumination—termed designation—for Army, Navy, and Air Force laser guided munitions. While the GLLD can be transported by members of the fire support team (FIST), it will normally be mounted in a vehicle. It is battery powered, operates with an AN/TAS-4 night sight, and the operator uses the DMD to transmit data to TACFIRE.

☐ **The Forward Observer Vehicle (FOV) Kit**

The FOV kit combines a laser rangefinder/designator, the DMD, night vision equipment, and a land navigation system. The kit will be mounted in an armored vehicle and issued in mechanized infantry, armored, and cavalry units. It will be available in the early 1980's. The FOV will dramatically enhance fire support capabilities—speed and accuracy—for the company team commander.

8-5. More Effective Fires: Range and Lethality

As the following developmental items become available, FSCoord's will be able to provide better fire support in two ways. Greater range capability will allow much more flexibility in massing fires, and improved projectiles will make those fires more deadly.

□ Weapons Developments

□ A new 81-mm mortar is being developed for armored and mechanized battalions, and a new 60-mm mortar for infantry, airborne, and air assault companies. In addition to increased ranges, these mortars feature smoke and illumination as well as HE capabilities. They will be fielded between 1979 and 1981.

□ The XM204 soft-recoil towed howitzer extends the present 105-mm range to 14.7 km.

□ The M198 155-mm towed howitzer is being developed to achieve an 18-km range with the current HE projectile and a 30-km range with rocket assisted projectiles (RAP).

□ The M110A1 8-inch, self-propelled howitzer extends the present range to 20.6 km and fires the RAP to approximately 30 km.

□ The Lance missile gives the corps commander an 8-110 km nuclear punch, and the addition of a nonnuclear warhead to the system provides a nonnuclear capability from 8-65 km.

□ The general support rocket system (GSRS) will provide long-range, high-volume, rapid-reaction firepower especially useful in the counterfire and air defense suppression roles.

□ HELLFIRE is currently an air-launched, laser-guided rocket system capable of multiple launches and guidance of rockets onto different targets using separate laser-designator codes. A ground-launched HELLFIRE concept is aimed at mounting HELLFIRE in a modified M113 armored personnel carrier and mounting a laser-

designator in a second M113 for survivability and better integration with the TOW missile. Ground-launched HELLFIRE can provide direct fires or indirect fires out to 7-9 km.

□ By 1980 the Navy's Spruance class destroyers will be fitted with the Mark 71 lightweight 8-inch gun. Known as the major caliber lightweight gun (MCLWG), it is fully automatic and has a range of 27 km.

□ The US Air Force Maverick missile inventory will be augmented with improved electro-optical, laser, and imaging infrared guidance systems to provide round-the-clock Maverick capability.

□ Ammunition Developments

□ The cannon launched guided projectile is being developed to give the FA a capability to kill moving armored targets. CLGP is guided by laser energy from a laser-designator (like the GLLD) and represents a quantum jump in field artillery effectiveness.

□ Other FA ammunition lethality is being increased by the development of new chemical and nuclear rounds, improved conventional munitions, and scatterable antitank and antipersonnel mine rounds. Ranges are being increased through improved design and development of rocket assisted projectiles (RAP). These projectiles will be available in 1980-1985.

□ A new 155-mm smoke round is being developed for introduction in FY 83. The projectile will provide two to three times the obscuration of the current projectile. The average obscuration time will be greater than 5 minutes and the delay from canister function to initial effective obscuration should be no longer than 45 seconds. The projectile filler has not been finalized.

□ The US Air Force is developing a new generation of cluster munitions—many with laser guidance packages—for large area targets. Many cluster bomb dispensers will contain target activated munitions (TAM)

designed to impede vehicle movement. These munitions are scheduled for fielding in 1976-1981.

8-6. More Effective Fires: Responsiveness and Accuracy

Numerous items are being developed with a view toward increasing the accuracy and the speed with which field artillery fires are delivered.

☐ The Battery Computer System (BCS)

The BCS is a technical fire direction computer designed to interface with TACFIRE. It features a widely expanded, more rapid computational capability and gun display units (GDU) that display firing data to howitzer section crews almost instantaneously. The BCS will be fielded by 1981.

☐ The Field Artillery Meteorological Acquisition System (FAMAS)

FAMAS is a transistorized, lightweight, mobile system that will more rapidly produce accurate meteorological data.

☐ Survey Devices

☐ The position and azimuth determining system (PADS) is a vehicular-mounted, inertial navigation system capable of extending grid coordinates, altitude, and directional control very rapidly to accuracies well suited for FA batteries.

☐ The survey electronic distance measuring equipment-infrared (SEDME-IR) and the survey instrument azimuth gyro lightweight (SIAGL) are being developed to speed up and lend more flexibility to distance and direction determination capabilities. Both are man portable.

☐ The Field Artillery Projectile Velocimeter

The velocimeter is a battery-powered doppler radar being developed to measure individual piece muzzle velocities. It is designed to be rapidly attached to or removed from any howitzer in a given battery. By 1979 one will be issued to each FA battery.

☐ Accurate First-Round Fires

Given accurate computational procedures (from the BCS or TACFIRE), accurate firing battery location (from PADS), accurate target location (from the GVS-5 or GLLD), timely and accurate meteorological information (from FAMAS), and an accurate muzzle velocity (from the velocimeter), field artillery batteries will be able to achieve first round fire-for-effect *without registering*.

8-7. Training Devices

The following devices are being developed to improve the soldier and unit training level in the garrison, local, and major training area. Their purpose is to maximize training and get the most value from every full service round fired.

☐ The Observed Fire Trainer (OFT)

The OFT is a computerized device that projects high-resolution color terrain scenes onto a large screen. Associated 1:50,000 maps are used to teach terrain association and map reading. Simulated firings of representative field artillery and mortar weapons will provide a wide range of shell fuze combination bursts for teaching observed fire procedures. Observers will engage realistic threat targets in fixed, fleeting, and moving arrays. The OFT will be fielded by 1979.

☐ **The Artillery Direct Fire Trainer (ADFT)**

The ADFT is a realistic, in-garrison, direct-fire trainer scheduled for fielding in late 1977. Gunners engage stationary or moving targets by firing the M55 eye safe laser that is linked to the howitzer fire control equipment. The device uses 1:10 scale ranges (40-160 meters represents 400-1,600 meters).

☐ **Automated Firing Battery Trainer (AFBT)**

Through the use of sensory devices, trainers can determine the accuracy of quadrant, deflection, bubble level, and sight pictures set by FA gunners and assistant gunners. A go no go indicator for remote monitoring and continuous error detection is provided. The AFBT will be fielded in 1978.

☐ **14.5-mm M31 Field Artillery Trainer MOD II**

This device improves the breech-mounted M31 trainer by fitting a 14.5-mm barrel into an inert projectile. The MOD II allows the addition of ammunition handling in both live and dry fire. Development is planned for 105-mm, 155-mm, and 8-inch systems. The estimated fielding date is 1980.

☐ **Low Cost Indirect Fire Training Rounds**

Inert training rounds are being developed for the 81-mm mortar, and the 105-mm, 155-mm, and 8-inch howitzers. A smoke puff will appear on impact. There is no dud hazard, which facilitates *realistic live fire combined arms training*.

☐ **Ground/Vehicular Laser Locator Designator (G/VLLD) Trainer**

The G/VLLD trainer will train observers to designate the 155-mm cannon-launched guided projectile (CLGP) and other guided munitions. There is a built-in scoring computer that immediately rates the operator's ability to track and designate a moving target. It mounts on the same traversing unit and tripod as the G/VLLD. Personnel can train indoors or outdoors, day or night, with full size or scale targets and ranges. The G/VLLD trainer will be fielded before CLGP.

☐ **Tape Cartridges for TACFIRE Training**

The cartridges will be compatible with TACFIRE tactical equipment and enable trainers to individually self-pace students through various applications of TACFIRE. Operators can train themselves. These tapes should be fielded in 1979.

☐ **Combined Arms Tactical Training Simulator (CATTS)**

This trainer is for task force commanders and staffs. It is computer assisted and allows free play tactical exercises. CATTS assesses battle losses, accounts for ammunition fired, and works in real time. Communications are the same as those in a battalion task force headquarters. CATTS is a large device requiring an extensive housing facility. One model is being tested at Fort Leavenworth and USACGSC students are using it to gain both maneuver and fire support training experience.

8-8. Summary

FSCoord's have at their fingertips a system that electronically automates fire support over the battlefield. Coupled with new target acquisition capabilities and armor-killing munitions, force commanders have significant hip-pocket combat power immediately available.

Automation and electronic devices are not the total answer to warfare—it takes adept, imaginative, and flexible commanders to make machines produce combat power. This comes from a thorough knowledge of equipment capabilities and tough, realistic training that keeps our fighting edge sharp.

"Whoever wants to keep alive must aim at victory. It is the winners who do the killing and the losers who get killed."

— Xenophon, 401 B.C.

The chapters of FM 6-20 are written for maneuver, field artillery, and Air Force commanders and their staffs. The appendixes are primarily for FA officers. They are written in sufficient detail to be used for instructional purposes.

Accordingly, the appendixes contain purposeful repetition of material from the chapters to insure complete discussion and to insure that subjects flow smoothly without the user having to continuously refer back to chapters for pertinent information.

Since the appendixes are "self-contained units," the FA user may desire to place them in a separate binder and tab them to facilitate their use.

Appendixes A through F provide detailed information on individual portions of the total fire support system. Appendixes G and H are concerned with terms,

documents, and agencies with which the FSCoord will accomplish his mission.

Appendix I explains "how to" accomplish the planning and coordination of the fire support system. Appendixes J, K, and L address unique subjects that are important to FSCoord operations. Appendix M is a complete list of references.

Appendixes

Note to the User

- A Target Acquisition**
- B The Field Artillery System**
- C Mortars**
- D Close Air Support**
- E Naval Gunfire Support**
- F Other Fire Support Means**
- G Field Artillery Fire Support/Fire Direction Facilities, Resources, and Duties**
- H Fire Support Terms and Techniques, Aids and Documents**
- I Fire Support Planning and Coordination**
- J Fire Support for Special Operations**
- K The Tactical Fire Direction System (TACFIRE)**
- L Nonnuclear Target Analysis**
- M References**



Appendix A Target Acquisition

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Appendix A

Target Acquisition

WHY

- The FSCoord must know how target acquisition operates within the intelligence system to produce targets for the fire support system and a picture of the battlefield that can be used in the maneuver commander's decisionmaking process.

WHAT

- This appendix tells you:
 - what target acquisition devices can do;
 - what target intelligence agencies are available;
 - how the target acquisition and intelligence agencies operate together;
 - who operates in the system;
- how the target acquisition system helps to get timely and accurate fire on the target.

A-1. General

a. Improved weapons technology has added depth to the battlefield by increasing ranges and has made combat more lethal by improvements in ammunition. These advantages will allow us to attack opposing forces effectively, only if they are coupled with an accurate and responsive target acquisition system. The target acquisition system must be able to acquire hostile targets at ranges that are at least equal to the capability of the longest range fire support means.

b. Therefore, targeting agencies must have access to all intelligence/information available to the tactical commander, allowing them to detect and locate the opponent for attack as early as possible. Effective target acquisition requires the rapid and complete integration of this intelligence from all sources. We cannot rely on single devices or observers providing targets independent of each other; we must merge inputs from a multitude of sources ranging from the frontline soldier in his foxhole, to the airborne sensor scanning deep into opponent territory. With the tremendous increase in mobility, the dimension of time has become increasingly important. One of the greatest difficulties confronting the commander and his fire support coordinator is balancing the need for timely target attack against the extra time required to insure location accuracy. Whether to attack an imprecisely located target now, or to take the time to include the input from additional sources necessary to further develop the target is a complex problem. This appendix discusses the intelligence and target acquisition agencies that are available to help the commander resolve this dilemma.

A-2. Definitions of Target Data

a. Combat information is raw data that can be used for fire or maneuver as it is

received with no interpretation or integration with other data.

b. Intelligence is data that has undergone validation, integration, comparison, or any other form of analysis.

c. Target acquisition is the timely detection, identification, and location of ground targets in sufficient detail to permit effective attack by supporting weapons.

A-3. Discussion of Target Data

a. Combat information is a readily exploitable, near real-time source of target data. Intelligence, on the other hand, requires time for fusion and analysis and is more appropriate for use by higher commanders. Target acquisition transcends the gap between these two ends of the battlefield information spectrum. Although target acquisition devices appear to produce primarily combat information, they can also provide intelligence data, just as targets can be generated from all sources of intelligence/information. Indeed, the key to battlefield success in the future may well be the sharing of information among all of the intelligence agencies located on the battlefield.

b. Target information will come directly from a source (e.g., soldier; radar) or indirectly through a collection agency (inf bn, S2; target acquisition battery (TAB) processing section). Direct reporting of target information is limited to those sources that can locate the target to an accuracy specified by the commander, or to those agencies that can locate, to a lesser accuracy, high priority, time-sensitive targets. There are systems designed specifically for target acquisition although they may perform the secondary function of intelligence gathering. For example, a moving target locating radar can provide accurately located targets for immediate attack as well as supplement the general surveillance and early warning system of the force.

c. There are numerous systems that can provide target information in addition to their primary intelligence function. This is demonstrated by electronic listening and locating stations which, though primarily oriented on obtaining electronic order of battle, can locate opposing elements through radio and radar direction finding. FA fire support and targeting elements may deal directly with collection agencies in the target acquisition effort. The information obtained from the exploitation of many sources of intelligence at all echelons is forwarded to collection agencies where it is analyzed and collated with other information to produce tactical intelligence for the commander and targets for attack with his fire support weapons. Although this processing takes time, responsive production of targets and target information can be realized if target information is passed to fire support assets as soon as it is identified.

A-4. The Target Acquisition Battery

a. The main component of the FA target acquisition is the TAB found at division artillery (div arty).

This unit produces counterfire targets almost exclusively and employs the following equipment:

□ Five weapon-locating radars AN/MPQ-4A.

Allocated by the div arty tactical operations center (TOC) to direct support and other field artillery battalions where needed in the division zone.

Can locate mortars to an accuracy of 0-50 m and artillery to an accuracy of 0-200 m out to a range of 15 km.

Vulnerable to radar direction finding and jamming.

Should not search indiscriminately or continuously but should be cued by other sources. This noncontinuous operation will

enhance survivability by countering enemy direction finding (DF) efforts.

Capability decreased by multiple firing.

- One moving target locating radar AN/TPS-58 or AN/TPS-25.

Positioned by div arty.

Provides line-of-sight search out to 20 km (AN/TPS-58) and 18 km (AN/TPS-25).

Can locate troop and vehicular movement.

Vulnerable to radar direction finding and jamming.

Should not search indiscriminately or continuously but should be cued by other sources. This noncontinuous operation will enhance survivability by countering enemy DF efforts.

Capabilities decreased by high wind.

Operator fatigue, which is common, decreases efficiency.

- Two sound-ranging bases.

Locate mortars, air defense and artillery weapons.

Accuracy of 0-150 m out to ranges of 20 km.

Limited by high wind, multiple firing, and terrain.

Require accurate survey.

Rely on wire (until introduction of AN/GRA-114 data link).

Operators may be confused by simulators.

- Eight flash-ranging observation posts (OP).

Locate air defense, artillery, overwatch OP's, and other targets.

Accuracy of 0-50 m out to 10 km (subject to visibility conditions).

Require accurate survey for best location accuracy.

OP's should be intervisible.

Operators may be confused by simulators and dummy positions.

Note. Personnel and equipment for airborne/airmobile division TAB will differ slightly.

b. The survey requirements for the above equipment vary. The radars can operate off map inspected locations but their accuracy is increased when survey control is available.

Flash bases can also operate, in an emergency, with assumed location data but direction control is critical for accurate locations. Sound bases are heavily dependent upon survey in order to produce targets of usable accuracy; however, counterfire targets can be attacked using the sound-on-sound adjustment technique without survey. In addition to its locating platoons, the TAB has a processing section that operates in the target production element of the div arty TOC. Here, the target processing section produces targets from reports submitted by the battery target acquisition devices as well as from all other agencies available to the force.

A-5. Other FA Agencies

Ground and aerial observers provide another asset for targeting data for fire support means. Ground observers with maneuver elements locate targets for immediate attack or for incorporation into fire plans. Although the FIST will report most of these targets, many other ground personnel will provide target information. The aerial observers assigned to div arty are valuable, immediately responsive sources of targets and intelligence. From aircraft in nap-of-the-earth flight they can acquire targets, call for fire, or report information over a wide frontage.

A-6. Non-FA Agencies

Other aviation assets may also report target information. Army aviators/observers in fixed and rotary-wing aircraft and Air Force forward air controllers (FAC) and other pilots should be exploited to provide target information. The employment of the various surveillance and intelligence agencies for target acquisition is limited only by their physical characteristics and their availability. Numerous agencies can detect and locate elements of the enemy force with

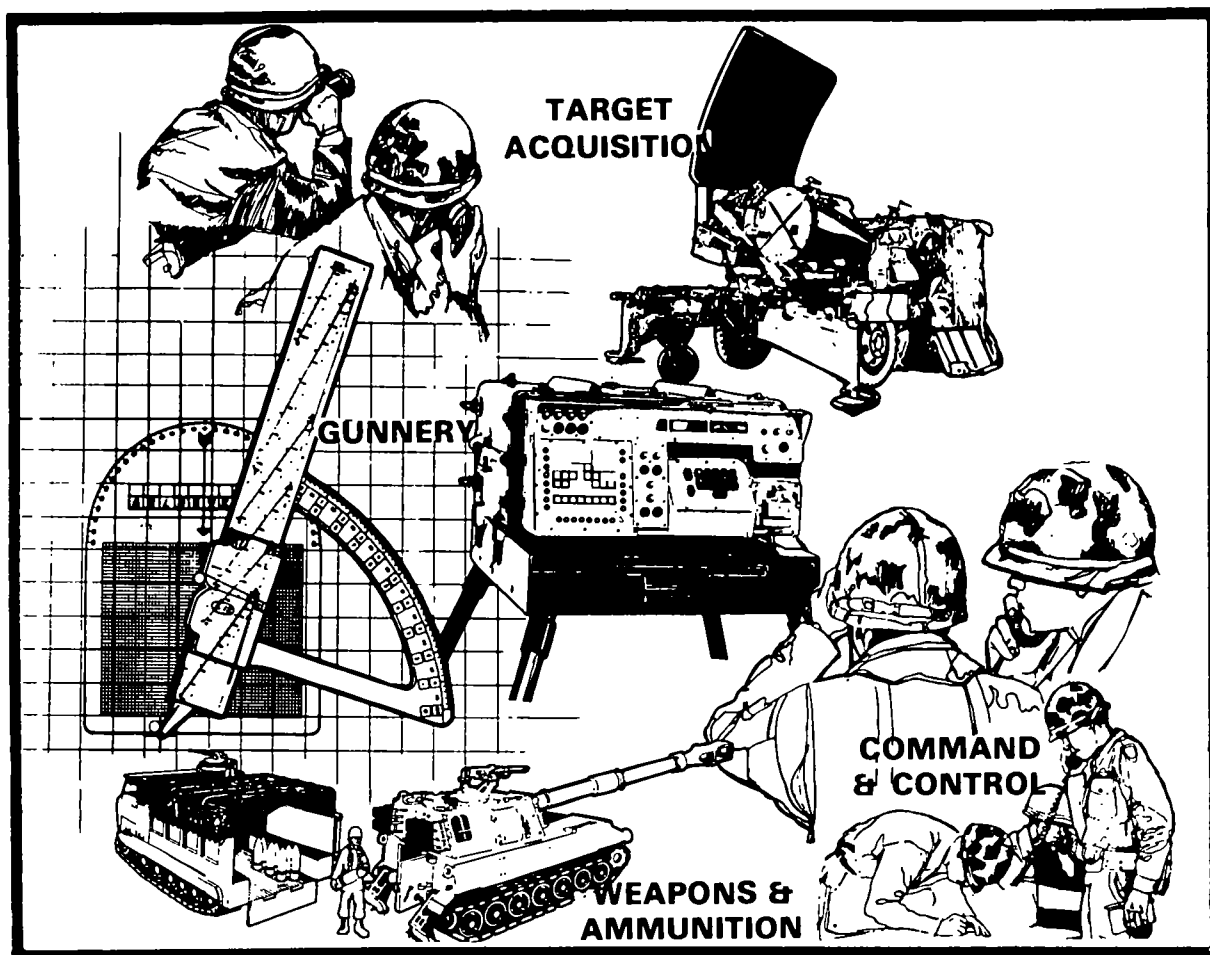


Figure B-1. The field artillery system.

b. Gunnery.

Converting calls for fire into firing data is gunnery. It includes:

Automatic Data Processing (ADP). ADP speeds up the delivery of fires, insures greater accuracy and efficiency of these fires, and establishes better control of ammunition. FA needs for ADP are great because of the vast quantity of information it must process to support a force and react responsively. The FA digital automatic computer (FADAC) is in service and the tactical fire direction system (TACFIRE) is soon to be fielded. (The TACFIRE system is discussed in appendix K.)

Survey. Survey provides accurate location and directional control for weapons and target acquisition devices of the FA system. Survey establishes a common grid and direction that allows the massing of fires and the delivery of surprise and unobserved fires.

Meteorology. Meteorology (met) is provided to compensate for changing atmospheric conditions that affect projectile trajectories and the efficiency of some target acquisition equipment. In addition to FA ballistic met messages, the FA met section also produces sound ranging met messages, air weather service messages, and fallout prediction messages.

Analysis. Fire direction personnel determine the type of ammunition, number of tubes/firing units, and the method of fire required to attack targets. They also consider firing unit status, ammunition availability, and the nature of the target. The fire direction officer will recommend alternate means of fire support if the target is not appropriate for FA attack, or if the target is such that multiple fire support means are required for target attack. Analysis is a combination of both technical and tactical considerations.

c. Weapons and Ammunition.

Appropriate combinations of weapons and ammunition are used to meet the changing needs of supported forces and the situation. These include high and low angle cannon fires, and rocket and missile fires, with appropriate munitions selection based on desired effects on targets, ammunition availability, signatures of delivery systems, and weather. (*Refer to tab A.*)

d. Command and Control.

Command and control permits the effective employment of FA assets. It includes:

Tactics. Tactics are developed to insure that responsive and effective fires are always available for the ground-gaining arms.

Organization. FA organization is flexible and tailored to meet the fire support needs of ground-gaining elements, and includes the necessary planning, controlling, and coordinating elements to integrate all fire support into the combined arms operation.

Fire Support Planning and Coordination. These are the links that provide the integration of FA with all of the means of fire support and with the battle plan of the supported maneuver force.

Communications. The effectiveness of fire support relies heavily on the adequacy of its communications. Communications bring the requester and provider together and is the means by which control and coordination of combat power is exercised. Communication and ADP complement each other in the FA system.

B-3. FA Responsibilities

The FA has a dual responsibility in contact:

a. Providing fires in support of maneuver actions and as a part of the overall fire support effort.

- Close support to maneuver units in combat.
- Counterfire operations against enemy indirect fire systems.
- Deep interdicting fires on enemy command posts, logistical installations, etc.

b. Providing fire support planning and coordination resources and facilities to all levels of a corps force—company to corps headquarters.

B-4. Field Artillery Tasks

a. Tasks to support the OFFENSE include

- providing immediately responsive fires to lead company teams;
- softening the enemy positions with a preparation;
- providing planned massed fires at the critical time and place;
- destroying, neutralizing, and suppressing enemy forces, weapons systems, facilities, and jammers;
- causing enemy armor to button up and slow down;
- isolating the breakthrough area with flanking smoke;
- suppressing enemy indirect fire weapons with counterfire;
- suppressing enemy air defense sites; and
- supporting advancing troops.

b. Tasks to support the DEFENSE include

- destroying, neutralizing, or suppressing enemy weapons in overwatch positions;
- disrupting the continuity of enemy formations and isolating portions of attacking forces (infantry from armor);
- destroying, neutralizing, and

above, but also through the assignment of tactical missions. FA tactical missions describe in detail the fire support responsibilities of an FA unit and establish the fire support relationship with a maneuver unit or another FA unit; they *do not* affect the organization structure and the command relationships that result from that structure.

Tactical missions are assigned by the force commander on the advice of the force FA commander in his role as the FSCoord. The *standard tactical missions* are direct support (DS), reinforcing (R), general support reinforcing (GSR), and general support (GS). The *inherent responsibilities* of each mission are shown in figure B-2.

An FA unit with a mission of—	Direct Support (DS)	Reinforcing (R)	General Support-Reinforcing (GSR)	General Support (GS)
1. Answers calls for fire in priority from—	1. Supported unit 2. Own observers* 3. Force FA HQ	1. Reinforced FA 2. Own observers* 3. Force FA HQ	1. Force FA HQ 2. Reinforced unit 3. Own observers*	1. Force FA HQ 2. Own observers*
2. Has as its zone of fire—	Zone of action of supported unit	Zone of fire of reinforced FA unit	Zone of action of supported unit to include zone of fire of reinforced FA unit	Zone of action of supported unit
3. Furnishes fire support team (FIST)—	FIST to each maneuver company**	No requirement	No requirement	No requirement
4. Furnishes FSO/LO—	FSO to each maneuver battalion and brigade of the supported unit**	LO to reinforced FA unit HQ	LO to reinforced FA unit HQ	No requirement
5. Establishes communications with—	FIST chiefs, FSO's and supported maneuver unit HQ	Reinforced FA unit HQ	Reinforced FA unit HQ	No requirement
6. Is positioned by—	DS FA unit commander or as ordered by force FA HQ	Reinforced FA unit or as ordered by force FA HQ	Force FA HQ or reinforced FA unit if approved by force FA HQ	Force FA HQ
7. Has its fires planned by—	Develops own fire plans	Reinforced FA unit HQ	Force FA HQ	Force FA HQ

*Includes all target acquisition means not deployed with supported unit (radar, AO, survey parties, etc.)

**The DS battalion *trains* and *initially deploys* an FSO team with each maneuver brigade/battalion and one FIST with each maneuver company in the supported brigade. After deployment, FIST and FSO teams will *remain* with the supported maneuver unit throughout the conflict.

Figure B-2. Inherent responsibilities of FA tactical missions.

a. Direct Support (DS).

An FA unit assigned a mission of direct support is immediately responsive to the fire support needs of a particular maneuver element, normally a brigade. The DS unit furnishes close and continuous fire support to the supported maneuver element and must coordinate its fires with those of the maneuver element. The commander of the DS unit positions his unit to conform with the supported maneuver commander's plans. To achieve cohesiveness in the combat arms team, the same FA unit should be habitually placed in DS of a particular maneuver unit. An FA unit with a DS mission remains under the command of the force FA commander. The essential feature of the DS mission is a one-to-one ratio between the FA unit and the supported maneuver unit. The DS mission is the most decentralized, demanding, and complex of the standard tactical missions; it is used most frequently to place an FA battalion in support of a maneuver brigade.

b. Reinforcing (R).

The FA *reinforces* other FA units that *support* maneuver units. When an FA unit requires augmentation of its fires to meet the fire support needs of a maneuver unit, the reinforcing mission is assigned to another FA unit to meet that need. An FA unit can *reinforce* only one other FA unit, but a reinforced FA unit *can be reinforced* by more than one FA unit. The reinforcing mission allows the FA or the force commander to increase tremendously the FA support of a subordinate unit without relinquishing complete control of his FA assets and without imposing major logistical and administrative support requirements on the subordinate maneuver commander. The reinforcing mission is decentralized, second only to the DS mission in degree.

c. General Support-Reinforcing (GSR).

The GSR mission requires the FA unit to

furnish FA fires for the force as a whole *and* to reinforce the fires of another FA unit as a second priority. A GSR unit remains under the control of the force FA headquarters, which therefore has priority of fires. However, because the inherent responsibilities of this mission dictate the establishment of liaison and communications with the reinforced FA unit, a quick fire channel is established for immediate response to the reinforced FA unit's need for additional fires. The GSR mission offers the force commander flexibility to meet the requirements of a variety of tactical situations.

d. General Support (GS).

An FA unit assigned the mission of GS provides FA support for the force as a whole and remains under the immediate control of the force FA headquarters. The GS mission provides FA immediately responsive to the needs of the force commander. A GS FA unit may not be effective in attacking some targets of opportunity since there is no direct communications link with the FIST at the maneuver company/troop. It is most effective against planned targets. The GS mission is the most centralized of the standard tactical missions.

e. Dedicated Battery.

An extension of the DS mission is to dedicate the fires of an FA battery to a maneuver company/team in the movement to contact. The FA battalion, once it has positioned the battery and placed it in the dedicated role, will have only minimal control of its activities. Figure B-3 shows the inherent responsibilities of a battalion with a DS mission and the specific requirements placed on the dedicated battery.

The total firepower of the *dedicated battery* is immediately available to suppress enemy direct fire weapons. It has direct fire planning and coordinating channels with the company/team FIST and uses preplanned

data and abbreviated procedures to answer calls for suppressive and other FA fires. The brigade commander, advised by the DS battalion commander, must decide how many batteries he can dedicate without seriously degrading the overall support of the brigade. After considering the advice of the DS commander, the brigade commander designates the maneuver company/team to receive the dedicated battery; the DS battalion commander designates the specific battery to be dedicated. In making his decisions, each commander considers his mission, the terrain, FA assets available, unit preparedness, and target acquisition.

RESPONSIBILITY	DS MISSION	DEDICATED BATTERY
Answers calls for fire in priority from	1. Supported unit 2. Own observers ¹ 3. Force FA HQ	1. Supported unit 2. DS Bn ²
Has as its zone of fire	Zone of action of supported unit	Zone of the supported company/team
Furnishes fire support teams (FIST)	FIST to each maneuver company	As directed by DS Bn Cdr
Furnishes FSO/LO	FSO to each maneuver battalion and brigade of the supported unit	Supported company/team (by BC when possible)
Establishes communication with	FIST chiefs, FSO's and supported maneuver unit HQ	1. Supported unit (on its command net) 2. FIST (on dedicated net)
Is positioned by	DS FA unit commander or as ordered by force FA HQ	DS Bn Cdr
Has its fires planned by	Develops own fire plans	FIST and company/team commander

¹Includes all target acquisition means not deployed with supported unit (e.g., radar, AO, and survey parties).

²While the dedicated battery may shoot other missions, it should do so only in dire emergencies.

Figure B-3. Responsibilities and requirements, dedicated battery.

Generally, dedicated batteries will be required when contact with the enemy is expected. The transition may be either hasty or deliberate.

Hasty Transition. When maneuver forces need a dedicated battery on short notice, established SOP's will allow well trained artillerymen to respond quickly. Four key actions are required.

- The order for dedication must be authenticated by DS battalion FDC.
- The FIST chief and the battery FDC will be assigned a dedicated fire direction net. The DS battalion S3 will direct all other observers on this net to use another net.
- The FIST chief will inform the company/team commander that he has dedicated fire support and will send maneuver control measures and all other targeting data to the dedicated battery FDC (the battalion FSO will monitor this transmission).
- The battery FDC must monitor the maneuver company/team command net.

Deliberate Transition. Deliberate transition, which is more desirable than hasty transition, allows for early identification of the units involved and provides *maximum* time for planning, coordination, and transition into dedication. In a deliberate transition, the same four actions needed for a hasty transition must be accomplished. Additionally, the battery commander should personally coordinate with the company/team commander to insure mutual understanding of

- the scheme of maneuver,
- the plan of fire support,
- call signs and frequencies, and
- exactly when dedication will start.

The actual transition may be keyed to a specific time, such as H-5 minutes, or a specific event, such as the lead maneuver element passing a phase line or reference point. It is imperative that the plan does NOT

call for positioning and dedicating the battery so early in the operation that the maneuver unit will move beyond the battery's range capabilities before contact with the enemy is anticipated.

The DS battalion S3 must continuously monitor the tactical situation to determine when a dedicated battery will not be able to accomplish its mission. He must either inform the brigade command element that dedicated support can no longer be provided or designate another battery to assume the dedicated support role if a battery becomes unable to accomplish its mission. If a backup battery is assigned, it must receive all of the required information (e.g., phase lines and targets) from the direct support battalion S3. The FIST chief should be told the new battery's location so that he and the company/team commander may consider effects of dispersion when engaging a target. In either case, the direct support battalion must always be prepared to augment the dedicated battery with fires from other units.

Within the brigade, several maneuver companies/teams may be advancing toward the enemy at the same time. Not all of these elements will require a dedicated battery. The DS battalion commander and the brigade commander must analyze the situation and determine guidelines for dedicating batteries and releasing batteries from dedication. Generally, dedicating batteries will be considered only when contact with the enemy is expected. The direct support battalion commander may change dedication from one battery to another because of personnel, logistic, materiel, or tactical considerations. Brigade command element approval is required to release the DS battalion from its requirement to supply dedicated batteries. This approval should be sought when a dedicated battery can no longer be supplied, when the mission of the supported maneuver company/team is changed and dedication is no longer required, or when the intensity of the battle reaches a level at which fire support requirements of the brigade as a whole

outweigh the need for providing dedicated fires to a single company/team.

When the direct support battalion provides dedicated batteries, reinforcing artillery units have added responsibilities:

(1) *Fires.*

Reinforcing battalions will deliver most of the brigade's planned fires and fire on targets of opportunity in zones other than that of the lead company/team. Because the battle should start in the zone of the lead company/team, reinforcing battalions must also be prepared to augment the fires of a dedicated battery.

(2) *Communications.*

To facilitate rapid delivery of fires, the DS battalion S3 may direct elements of the reinforcing battalion to communicate directly with a FIST observer or a dedicated battery FDC on a specified DS battalion radio net. It is not desirable for these elements to use a reinforcing battalion net because the FIST observer, the FSO, and the dedicated battery FDC would be forced to change frequencies. When this has to be done, the direct support battalion FDC can monitor the net on the reinforcing battalion LO's radio.

(3) *Dedication.*

Under rare circumstances, a battery of the reinforcing battalion may be dedicated. When this occurs, the DS battalion S3 must insure that this battery receives all necessary targeting data, receives a synopsis of the tactical situation, and enters the company/team net, the dedicated F net, and the direct support battalion's CF net. A complete discussion of the dedicated battery role of the FA is in FM 6-40-5, *Modern Battlefield Gunnery*. Dedication of a battery results in a tremendous *increase* in fire support available to a selected company/team and a significant decrease in the fire support available to the brigade as a whole. Accordingly, howitzer batteries are dedicated only in a movement to contact situation and then only rarely.

B-9. Nonstandard Tactical Missions

When a commander's intent cannot be conveyed with a standard tactical mission, a nonstandard tactical mission may be assigned. This is done by either issuing a mission statement along with explicit instructions on *each* of the seven inherent responsibilities or by giving a standard tactical mission and explaining how it has been changed. The following three examples illustrate the latter:

1-50 FA: R 1-10 FA; positioning authority retained by division artillery.

1-60 FA: GSR 1-20 FA; do not exceed 50 percent CSR to reinforce 1-20 FA.

1-70 FA: GS; provide LO to division artillery TOC.

The example below depicts the procedure for issuing a mission when more than one or two of the inherent responsibilities change.

1-80 FA augment the fires of 1-10 FA:

- Answer calls for fire in priority from 1-10 FA, 3-4 CAV, and division artillery.
- Zone of fire is to be assigned by division artillery.
- There is no FIST requirement.
- Establish liaison with 1-10 FA.
- Establish communications with 1-10 FA and 3-4 CAV.
- 1-10 FA will position (div arty approval required).
- Division artillery will plan fires.

B-10. Warning Order (On-Order Mission)

An on-order mission allows an FA unit to anticipate and plan an orderly transition from the current mission or status to a new status or mission. It also allows the unit to receive on-order fires to incorporate that fire support into its planning: 1-50 FA: GSR 1-40 FA; on order DS 1st Bde.

This on-order tactical mission (DS 1st Bde) tells the commander 1-50 FA that he will be notified when he is to assume a new mission. He may now make plans and take

preliminary actions to make the transition quickly and smoothly; for example, he would probably establish communications and liaison with the 1st Brigade and, if not already accomplished, send FIST's to the maneuver companies of the brigade.

B-11. Organization for Combat

FA is organized for combat to provide responsive and effective FA fires and to coordinate all fire support. The objective of organization for combat is to insure that each FA unit is in a tactical organization and is assigned a tactical mission. The FSCoord recommends and the force commander approves the organization of FA for combat after analyzing the

- mission of the force,
- commander's concept of operation,
- amount and type of FA available,
- targeting sources available,
- plan for future operations,
- amount and type of other fire support available,
- weather and terrain,
- unit operational readiness, and
- availability of positions and ammunition.

Organizing for combat is the means by which the force commander allocates FA assets to meet his own needs for FA fires as well as the needs of subordinate elements. He must provide FA assets for close support—DS and R—of subordinate elements and retain adequate assets under his immediate control—GSR and GS—to influence the battle at the critical time and place. These are the guiding fundamentals for distribution of assets when organizing FA for combat:

a. Maximum Feasible Centralized Control.

FA is most effective when control is centralized at the highest level consistent with its fire support capabilities and the requirements for the overall mission.

Centralized control of FA permits flexibility in its employment and insures that effective support can be rendered to each subordinate element of the command and to the force as a whole. Each standard tactical mission represents a different degree of centralized control and a different degree of responsiveness to the committed units. Control of the FA with a force must be decentralized sufficiently to make some FA immediately responsive to the needs of the committed units, but some FA normally is kept responsive to the needs of the force as a whole. The *optimum* degree of centralized control varies with each tactical situation.

A high degree of centralized control is desired in a *defensive* situation. Since the enemy has the initiative, it is difficult to predict accurately when and where he will strike. Therefore, to insure that he has the ability to influence the action wherever it may develop, the force commander should retain more control of his FA through greater centralization.

A lesser degree of centralized control is required in an *offensive* situation because the supported force possesses the initiative. To assist the close combat elements in retaining this initiative and in maintaining the momentum of the attack, the force commander may grant subordinate FA commanders wider latitude so that the responsiveness of the FA can be more sharply focused on the fire support requirements of the maneuver elements of the force.

The standard tactical missions achieve varying degrees of centralized control. Centralized control is also exercised through the command structure when the force FA headquarters retains command of an FA unit, providing an added measure of flexibility to the force. Therefore, FA units normally are not attached to brigade-size or smaller maneuver units unless distance, communication problems, or other factors prevent the force FA headquarters from exercising adequate control. Attachment changes the command structure and reduces

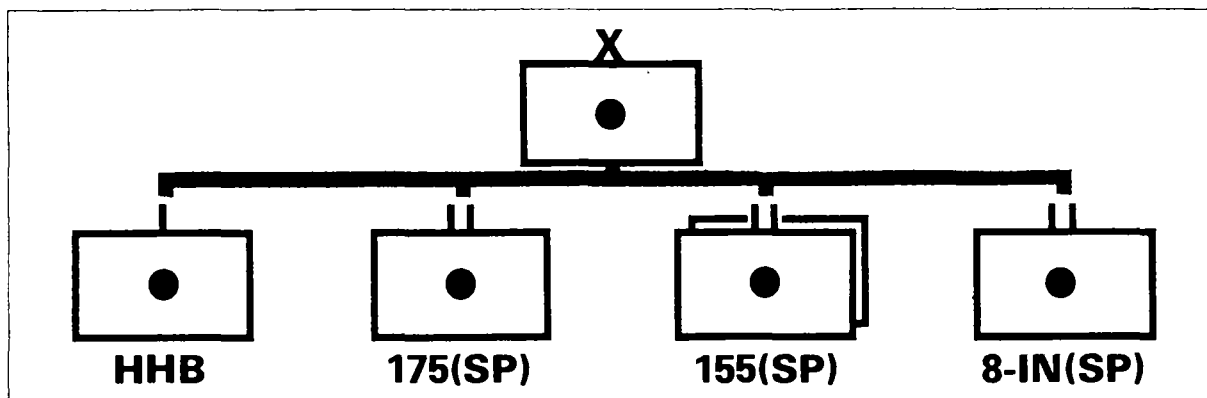


Figure B-7. Type FA brigade.

The FA brigade normally has no ground-gaining maneuver counterpart; therefore, its commander does not have the responsibility to serve on a special staff nor does he normally act as a FSCoord. His specific duties are

- augmenting fires of division artilleries based on his tactical mission or status;
- controlling elements attached by corps and coordinating elements of FA system relating to his organization;
- insuring flow of intelligence to and from outside agencies;
- maintaining liaison commensurate with mission; and
- coordinating general positions, fire planning, and displacements of own organization.

When practicable, an FA brigade should be habitually associated with a specific supported unit to provide cohesiveness of combat operations. The corps commander's needs and the military situation will dictate what he does with his artillery. If an FA brigade is available the corps commander will normally attach it to a division or give it the mission of GSR or reinforcing (R) a division artillery.

When an FA brigade is attached to a division, the brigade is able to function as an alternate division artillery TOC or assume the responsibilities of support of a maneuver brigade in a portion of the division zone. Also,

the FA brigade can function as the force FA headquarters for a covering force operation. Primary considerations in determining when to attach include

- the amount of immediately responsive FA needed by the divisions,
- the need for the corps to employ the fires of the FA brigade, and
- flexibility required to facilitate future operations.

If wide corps frontages, deep division sectors, speed of movement or distance make it difficult for corps to use cannon FA to influence the battle, then attachment may be desirable. On the other hand, if corps sees a need to exercise greater control of cannon units, or, if it is likely that the FA brigade will need to be shifted from one division to another during an operation, a GSR or reinforcing mission may be preferred. A GSR mission would keep positioning and fire planning authority at corps level, but would allow the division artillery to shoot the brigade without going through corps FAS. A reinforcing (R) mission would allow the reinforced division artillery to position, plan the fires of, and shoot the brigade, but it still would not tie up the FA brigade's battalions to the extent that the FA brigade mission could not easily be changed.

The weakness in both these situations is responsiveness. If the FA brigade has a GSR or a *standard* reinforcing mission, a

divisional DS battalion must go through *both* division artillery headquarters and the FA brigade headquarters to get fires from one of the FA brigade's battalions.

If neither attachment, GSR, nor a standard R mission seems desirable, the corps commander may achieve something of a balance in at least two ways:

(1) Modify the attachment order. For example, 42d FA Brigade attached to 1st Armored Division effective 131400Z. CG, 1st Armored Division do not employ elements of 42d FA Brigade east of the GREEN River.

(2) Modify the reinforcing mission in one of two ways:

(a) Tell the FA brigade and division artillery commanders to set up quick-fire channels.

(b) Allow the division artillery commander to assign to certain of the FA brigade's battalions missions of GSR or R division artillery or the divisional FA

battalions. For example, 1-41st FA (FA Bde) GSR 1-2 FA.

c. Separate Commands.

Armored cavalry regiments (ACR) and separate brigades have organic artillery units (one battery per squadron in the ACR and a battalion in the brigade). The fires of these separate commands may also be augmented by other FA units. When these commands are attached to a division, their organic FA units are normally attached to the division artillery to provide a more coordinated use of their fires in supporting the division's battle plan.

d. Division Artillery.

At division level, the division artillery is the tactical headquarters that commands and controls the organic FA and attached units. Unlike the corps artillery or FA brigades, the division artillery of each type division has its own organic FA battalions as shown in figures B-8 through B-11.

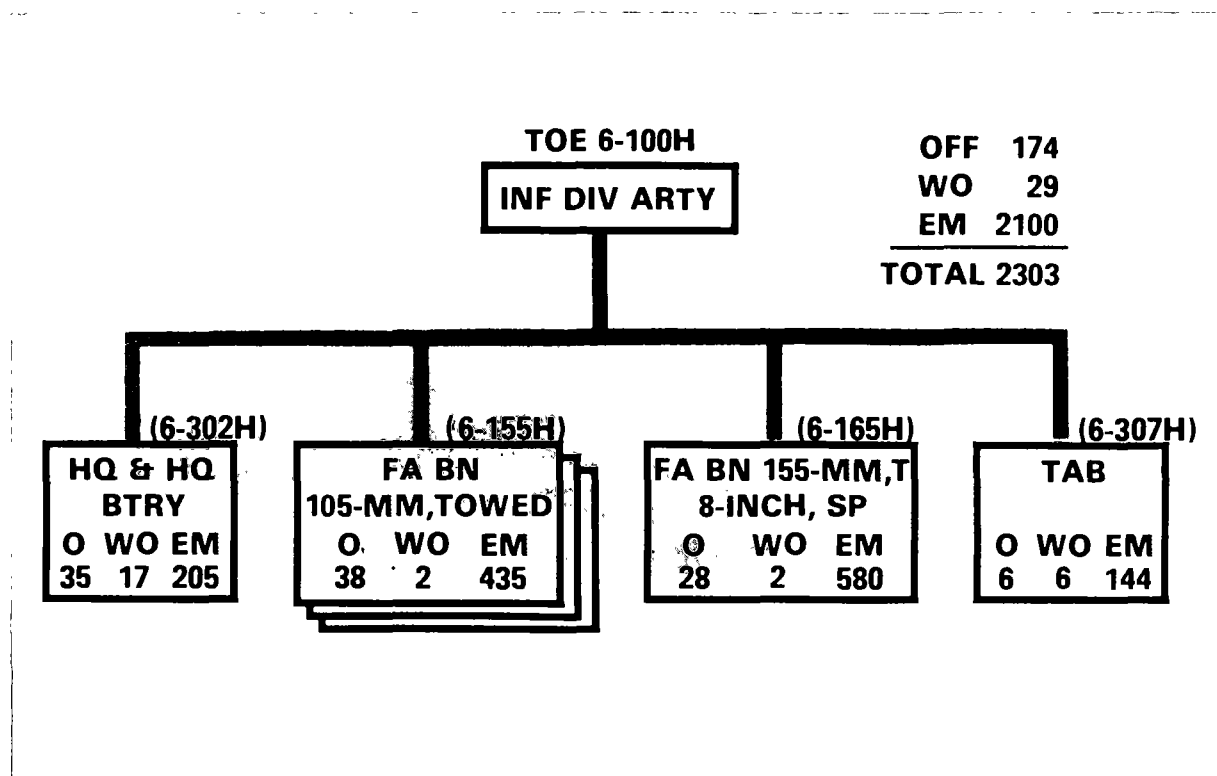


Figure B-8 Field artillery organic to infantry divisions.

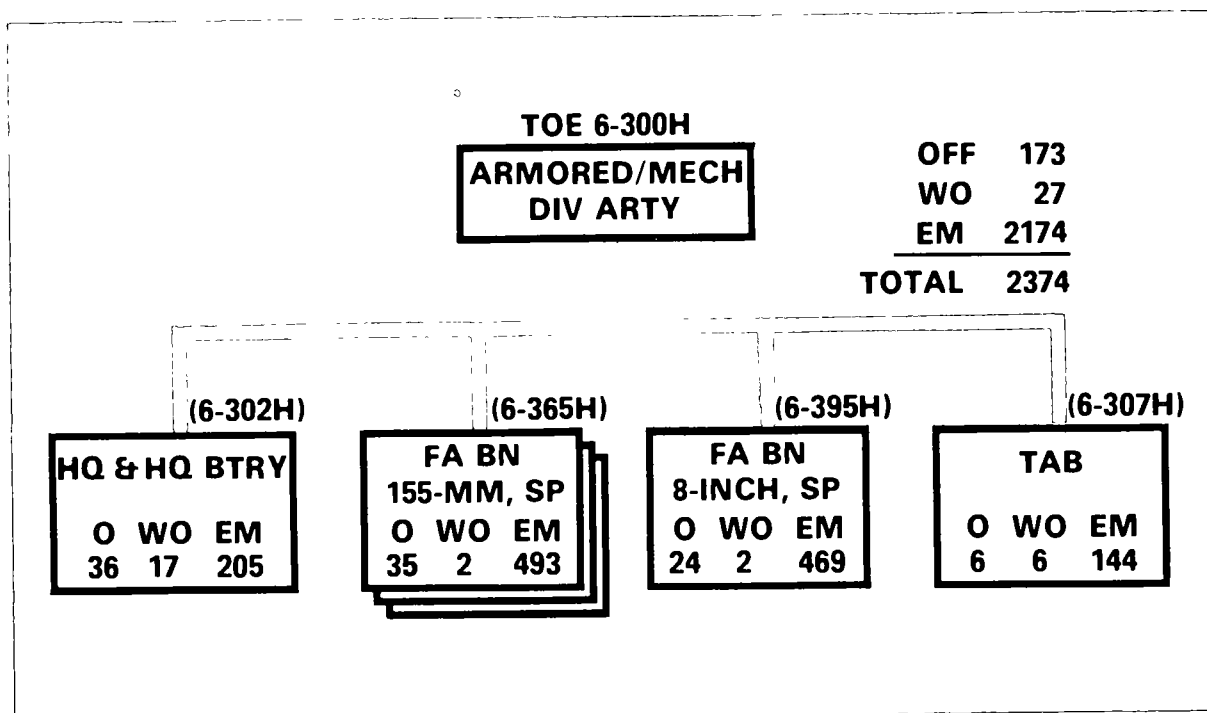


Figure B-9. Field artillery organic to armored and mechanized divisions.

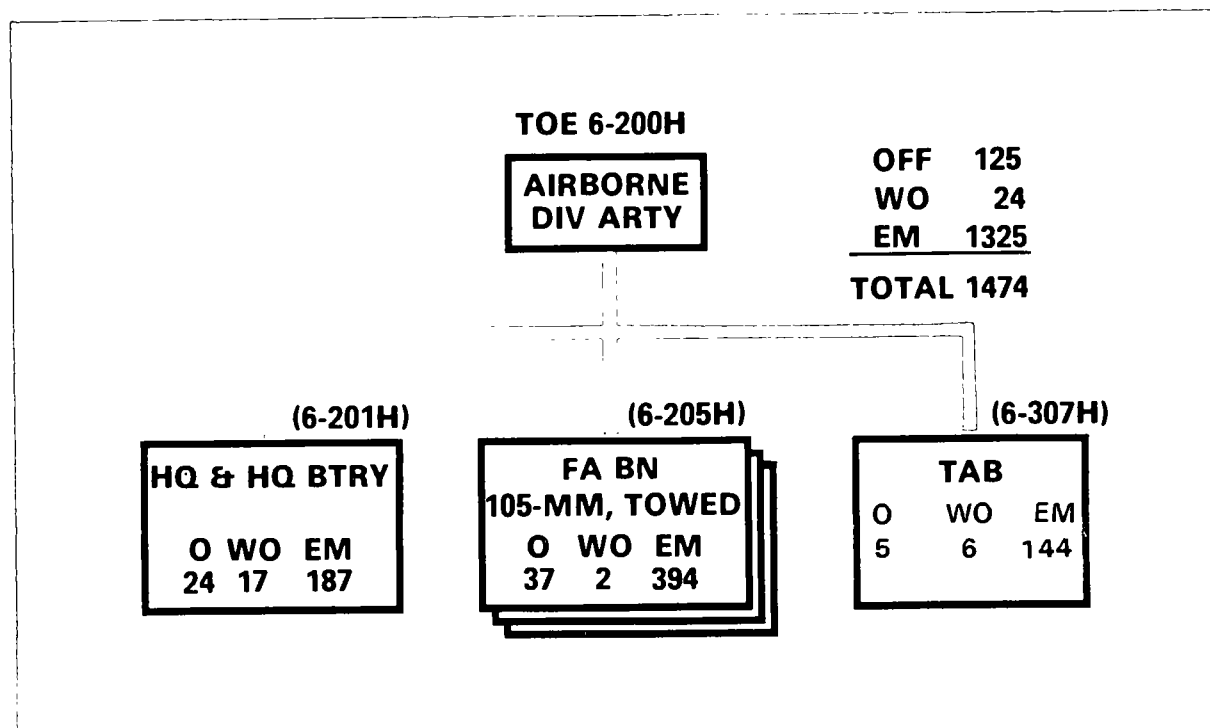


Figure B-10. Field artillery organic to airborne divisions.

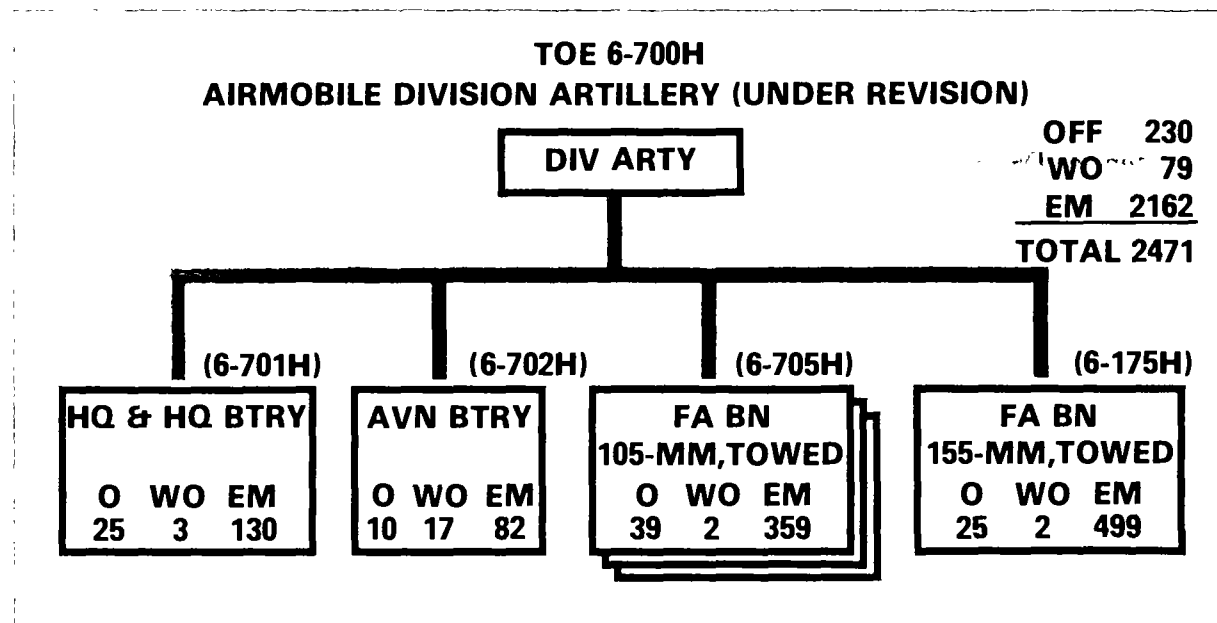


Figure B-11. Field artillery organic to airmobile divisions.

The division artillery establishes a division artillery TOC for the control of *FA fires* and two FSE's to plan and coordinate all fire support for the division. The MAIN FSE is located at the division MAIN CP and the TAC FSE is at the division TAC CP. (Appendixes G and I discuss these two FSE's and their roles in the fire support planning and coordination process.) The division artillery commander functions at

- the division artillery TOC as the commander of organic or attached FA units and
- the MAIN and TAC FSE's as the FSCoord of the division.

The division artillery commander is responsible for all FA support for the division. This is accomplished by the assignment of tactical missions to the FA battalions organic or attached to division artillery, and the effective use of augmenting FA fires allocated by corps artillery.

e. Battalion Group.

In the absence of an FA brigade or other suitable tactical headquarters, one FA

battalion may be attached to another FA battalion to form a battalion group. Battalion groups are formed for a limited period of time when it is desired to have one battalion exercise a degree of control over another battalion greater than that established through the relationship of a reinforcing battalion. It is advantageous to form a battalion group when the supported force—a brigade or brigade-size task force, for example—requires the fires of two field artillery battalions, but communications problems or distance prevent the force FA headquarters from exercising effective controls over the two battalions. Formation of a battalion group facilitates control and direction of fires under a single headquarters, thus providing unity of command. A battalion group normally does not exceed two units. When a battalion group is formed the following conditions apply:

- The battalion group headquarters functions only as a tactical headquarters for a *limited* period of time.
- The numerical designation of the

WEAPON

Characteristics	175-mm M107(SP)	8-inch M110(SP)	8-inch M110A1(SP)
Maximum range (meters)	32,700	16,800	20,600
Travel weight (lb)	62,100	58,500	62,100
Traverse limits (mils)	533(R) 533(L)	533(R) 533(L)	533(R) 533(L)
Elevation limits (mils)	+35 to +1,156	+35 to +1,156	+35 to +1,156
Maximum rate of fire (first 3 min)	4.5	4.5	4.5
Sustained rate of fire (rd per min)	0.5	0.5	0.5
Water crossing capability	Fordable (42 in)	Fordable (42 in)	Fordable (42 in)
*Time to emplace (min)	3.0	2.5	2.5
Prime mover	SP	SP	SP
Reference manuals	FM 6-94 TM 9-2300-216-10	FM 6-94 TM 9-2300-216-10	FM 6-94 TM 9-2300-216-10
Ammo Type	HE	HE, HE-SPOTTING, NUC, Agent, ICM	
Fuze Type	PD, MTSQ, VT	PD, VT, MTSQ, CP, MT	
Weight of HE Projectile (lbs)	147	200	200

*Time shown is that needed to emplace/lay a registering piece.

B-A-4. Characteristics of FA Missiles

CHARACTERISTICS	WEAPON		
	PERSHING 1A	LANCE	HONEST JOHN
Minimum and maximum range (approx km)	185-740	8-110 (nuc) 8-65 (nonnuc)	5-38
Guidance	Inertial	Modified inertial	Ballistic
Propulsion	Solid propellant	Storable prepackaged liquids	Solid propellant
Prime mover	M757 5-ton, 8x8	M752 SP launcher**	M386 Launcher (SP)*
Field of fire (mils)	133 (R) — 133 (L)	285 (R) — 285 (L) (nuc) 400 (R) — 400 (L) (nonnuc)	533 (R) — 533 (L)
Launch elevation	+1,600 mils	48 and 54	0-1244 mils
Length of missile (meters)	10.39	6.17	7.6
Diameter (millimeters)	1,016	559	762
Missile weight (lb)	10,275	2,900 (nuc) 3,400 (nonnuc)	4332
Reference manuals	FM 6-39 (S) TM 9-1410-380-series	FM 6-42 (C) TM 9-1424-485-series	FM 6-59 FM 6-61 TM 9-1340-202-series

*Honest John also has an M289 SP launcher and an M33 towed launcher.

**Lance also has a towed M740 launcher zero length (LZL).

Appendix D

Close Air Support

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Appendix D

Close Air Support

Section I.

DEFINITION AND MISSION

Close air support (CAS) is defined as air attacks against hostile targets that are in close proximity to friendly forces and that require detailed integration of each air mission with the fire and movement of those forces. Each CAS mission is flown at the request of surface forces and is integrated with the fire and maneuver of surface forces. CAS is used when targets cannot be engaged satisfactorily with organic or attached fire support, or when additional fire support is needed to achieve desired results. The surface force commander states the results he desires from CAS missions as "destroy, neutralize, or suppress."

WHY

- ☐ The FSCoord must use CAS effectively as an integral means of fire support.

WHAT

- ☐ This appendix describes the:
 - ☐ definition/mission;
 - ☐ capabilities/limitations;
 - ☐ available aircraft/ordnance;
 - ☐ employment considerations;
 - ☐ FSCoord responsibilities;
 - ☐ control;
 - ☐ fire support planning; and
 - ☐ request channels for close air support.

Types of CAS include:

- ☐ Support of troops in contact (imminent contact, active contact, or recently broken contact).
- ☐ Softening objectives prior to friendly surface forces' advance, including landing zone and drop zone preparations, and striking shoreline targets prior to amphibious assaults.
- ☐ Escort missions, including convoy and column cover and escort of helicopters and watercraft.
- ☐ Attack of follow-on echelons.

CAS is provided by tactical air forces of the Air Force, Navy, Marines, and supporting allied air forces.

CAS is effective against hard and/or mobile targets and against enemy troop concentrations, fixed positions, and armored units.

D-1. Combat Roles of Tactical Air Support

Tactical air forces are committed to perform the following five missions (fig D-1).

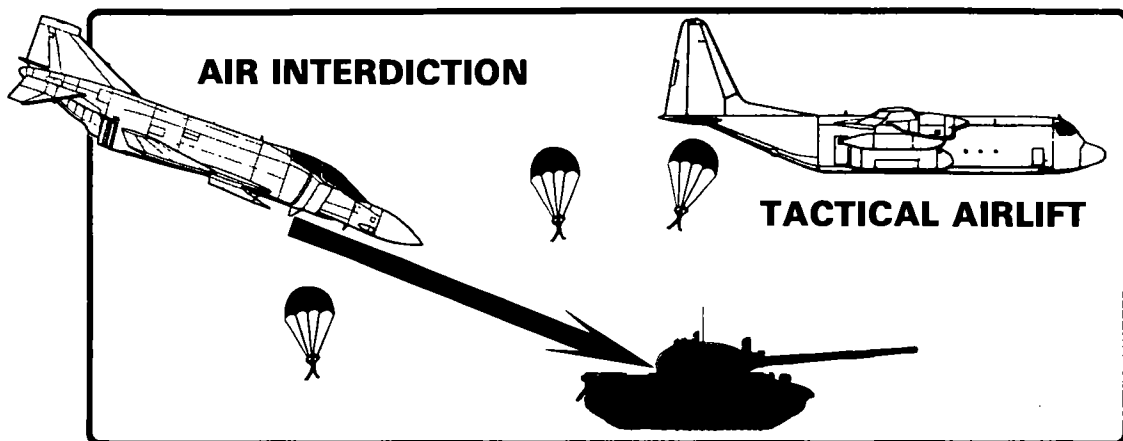
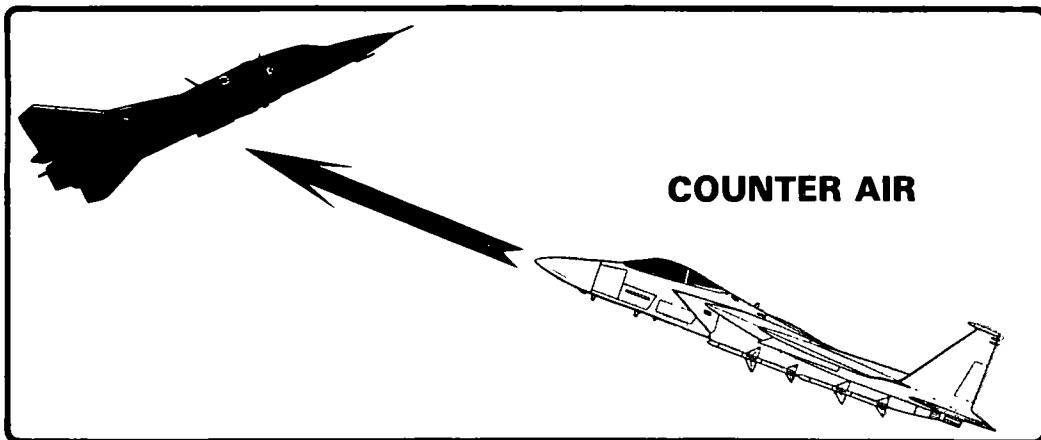
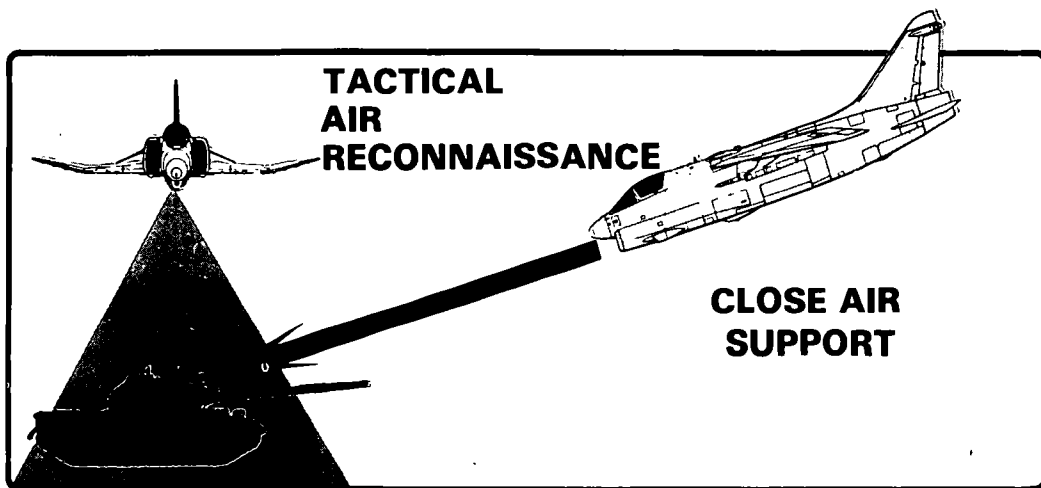


Figure D-1. Tactical air support.

a. *Counterair* operations are conducted to gain and maintain air superiority, thereby preventing the enemy forces from effectively interfering with friendly surface and air operations. Counterair includes air action against enemy air defense positions.

b. *Tactical airlift* is the air movement of personnel and cargo by the Air Force available to the joint force commander. The FSCOORD is not involved in this role.

c. *Tactical air reconnaissance* is the use of tactical aircraft to obtain information on terrain; weather; and the disposition, composition, movement, installations, lines of communications, and electronic and communication emissions of enemy forces. The FSCOORD is only interested inasmuch as he generates requirements to look for something or wishes to know of things seen by the Air Force in his area.

d. *Air interdiction* is air operations conducted to destroy, neutralize, or delay the

enemy's military potential before it can be brought to bear effectively against friendly forces, at such distance from friendly forces that *detailed* integration of each air mission with the fire and maneuver of friendly forces is not required. Air interdiction is initiated and executed by the Air Force. During actual operations there may be some overlap between air interdiction and CAS missions. See paragraph e below for further discussion.

e. *Close air support (CAS)* is air action against hostile targets that are in close proximity to friendly forces and that require detailed integration of each air mission with the fire and maneuver of friendly forces. Those CAS missions within 1-5 km of the forward line of own troops (FLOT) normally require a FAC to insure troop safety. Those CAS missions farther away from friendly troops may not require forward air control on to a specific target although FAC's may indicate likely target areas.

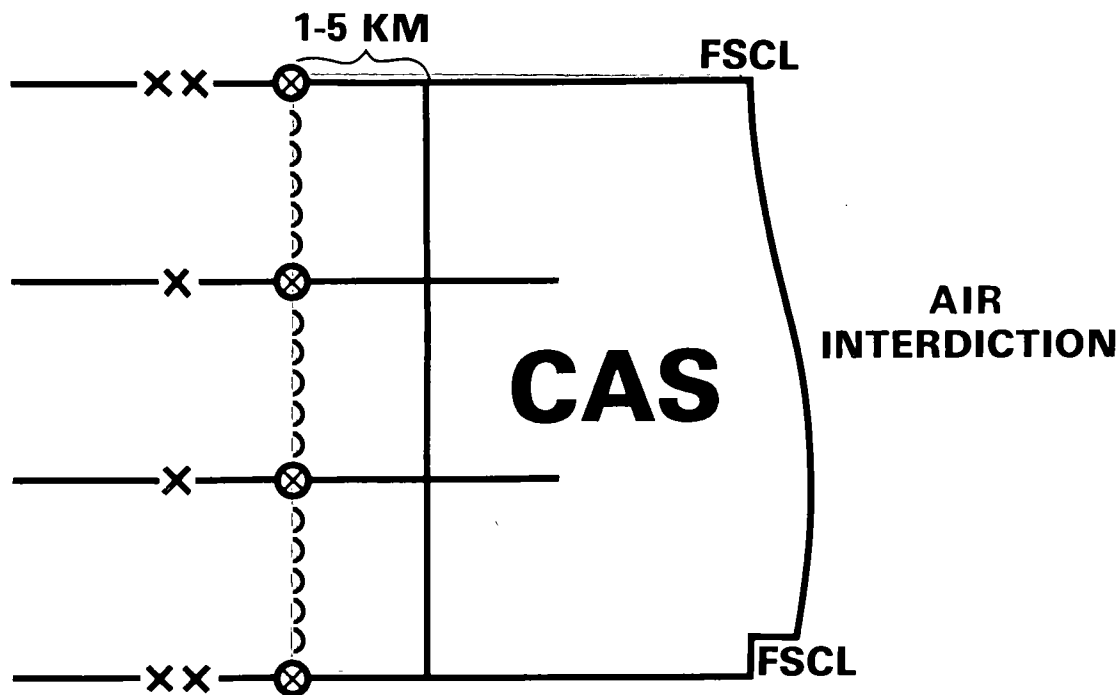


Figure D-2 Relationship of close air support and air interdiction.

The FSCL also helps to insure troop safety. All air attacks against ground targets short of this line must be coordinated with the appropriate ground force commander. The FSCL should be established as close to the forward elements as possible consistent with the tactical situation and its development. The FSCL must also be easily identifiable from the air. *For planning convenience*, CAS is normally planned short of the FSCL and air interdiction is planned beyond the FSCL as shown in Figure D-2.

During actual operations, however, the FSCL is not a clear-cut dividing line between CAS and air interdiction missions. Air operations against enemy combat forces deployed in depth will require the blending of air interdiction and CAS into a single cohesive operation extending from the FLOT to the enemy's rear echelons. The ground commander may employ CAS sorties as well as artillery fires beyond the FSCL. Coordinated air interdiction and counter air missions (e.g., air defense suppression) may be flown short of the FSCL. Those air interdiction operations which have a direct effect upon land operations must be coordinated and integrated with the ground commander's plan.

Each role of TAC AIR provides needed support in a specific area. However, in this discussion of the fire support coordinator's (FSCOORD) role on the battlefield, reference will be made *only* to the use of close air support. More information on the other tactical air functions can be found in FM 100-26.

Section II. CAPABILITIES AND LIMITATIONS

D-2. Capabilities

Tactical air forces provide the best fire support when maximum advantage is taken of their inherent strengths. Fire planners at all levels must exploit these strengths.

- a. High Speed and Long Range.

The joint force commander can shift the mass of tactical air firepower from point to point on a theaterwide battlefield at short notice. The range (extended by aerial refueling) and speed of modern aircraft, coupled with centralized control, allow the joint force commander to focus tactical air firepower in support of maneuver commanders who have highest priority for fire support.

- b. Versatility.

Tactical air forces provide close air support with a variety of weapons optimized for a broad range of targets. Every target on the modern battlefield is vulnerable to tactical air firepower. Close air support strikes are particularly effective against hard and mobile targets.

- c. Delivery Accuracy.

Due to the variety of delivery techniques available and the guidance systems built into some air-delivered ordnance, first-round hit probabilities are high. Strafing, for example, can be employed 25 meters from protected friendly troops.

- d. Excellent Air-Ground Communications.

Army and Air Force components both provide communications support for the air ground operations system (AGOS). These systems are parallel from battalion to theater. The Army portion of this system (wire, messenger, or radio) is used for requesting preplanned air support and for coordinating air operations with ground operations. The Air Force tactical air control system (UHF, VHF, HF-SSB, and FM radio) provides good communication for requesting immediate CAS (HF-SSB) as well as UHF and FM for controlling strike aircraft.

D-3. Limitations

Although CAS firepower can solve many problems for the maneuver commander, its use is subject to certain constraints.

- a. Availability of Aircraft.

There seldom will be enough aircraft to

support all close air support requests. Consequently, maneuver commanders cannot have equal claim on close air support. Commanders and fire planners must insure that close air support is massed at the most critical points on the battlefield at the most decisive times.

b. Delivery Restrictions Imposed by Night and Weather.

Although tactical air forces possess target acquisition and computed weapons release systems that allow 24-hour, all-weather ordnance delivery, the optimum weapon for a particular target may not be employable under all conditions.

c. Delivery Restrictions Imposed by Air Defenses.

When faced with an intense array of surface-to-air missiles and antiaircraft artillery, close air support aircraft have two options:

- (1) Deliver ordnance optimized for increased standoff ranges, which preclude use of certain short-range munitions or
- (2) Use low attitude penetration tactics and attack targets from a popup maneuver.



A-4 Navy/Marines

Subsonic, nuclear-capable aircraft; 9,000-lb ordnance load

d. Time on Station and Delayed Response.

The primary CAS aircraft have varying capabilities to loiter on station which must be taken into account when planning their employment. This limitation is especially important when immediate air strikes are requested. Because of the unplanned nature of immediate air strikes, the aircraft which execute them must be scrambled or diverted from other missions. Their ability to loiter on station as well as their responsiveness may be reduced.

Section III. AIRCRAFT USED IN CLOSE AIR SUPPORT

Based upon current inventories, the primary CAS aircraft are the A-7, A-10, A-37, and F-100. When sufficient quantities attain operational capability, the A-10 will be the USAF's primary CAS aircraft. Ordnance loads depicted represent maximum carriage capability and not necessarily typical combat loads. Aircraft that may be provided during CAS of ground forces include the following:



A-7 Air Force/Navy

*Subsonic ground attack aircraft; most accurate delivery; 15,000-lb ordnance load. FM communications**



A-37 Air National Guard/Air Force Reserve

*Subsonic, CAS version of primary trainer, 4,000-lb ordnance load. FM communications**



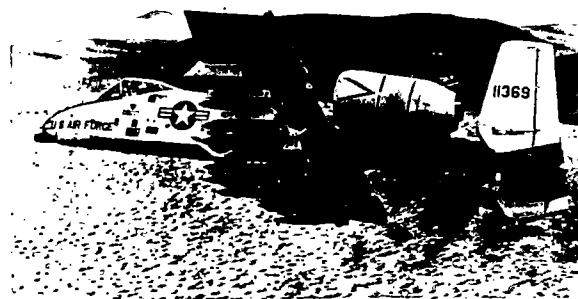
F-4 Air Force/Navy/Marines

Supersonic, nuclear-capable (except USMC), multi-mission aircraft, optimized for air-to-air combat; also has good air-to-ground capability; 16,000-lb ordnance load.



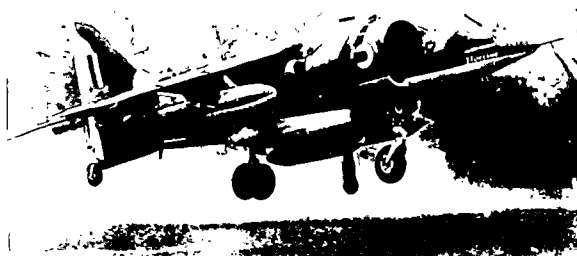
A-6 Navy/Marines

Subsonic, all-weather tactical bomber; 18,000-lb ordnance load.



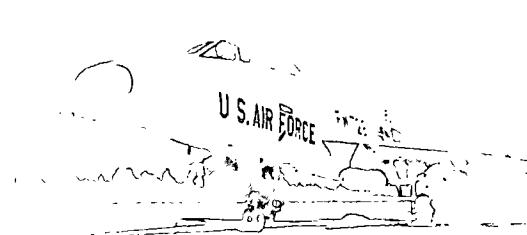
A-10 Air Force

*Subsonic aircraft specialized for CAS; 16,000-lb ordnance load; 30-mm gun. FM communications**



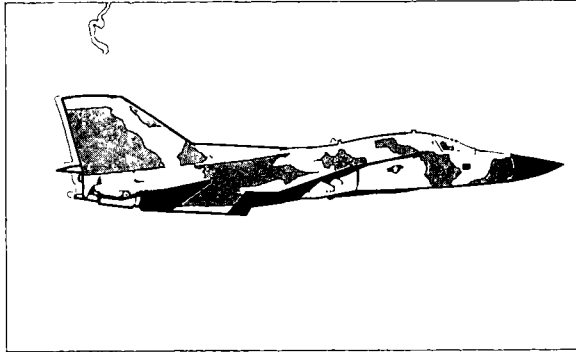
AV-8 Marines

Subsonic, vertical take-off-and-land CAS aircraft; 5,000-lb ordnance load; 30-mm gun.



F-100 Air National Guard

Supersonic, nuclear-capable, multi-mission aircraft, 7,500-lb ordnance load.



F-111 Air Force

Supersonic, nuclear-capable tactical bomber; all-weather, day and night capability; 36,000-lb ordnance load. Primarily used for interdiction.

**The A-4, A-7, A-10, A-37, and AV-8 are the only aircraft with which the FIST chief can communicate directly when he controls an airstrike.*

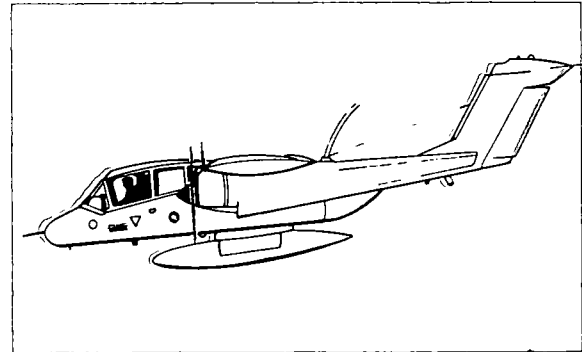
Section IV. CLOSE AIR SUPPORT ORDNANCE

D-4. Ordnance Characteristics

There are many different types, subtypes, and modifications of air-delivered ordnance. Each type of ordnance has characteristics that make it the best for a particular target. The ordnance considered most effective against the target will be loaded for preplanned strikes, subject to inventory and environment restrictions, carriage and delivery restrictions, and political restrictions. Ordnance effective against the most likely targets will be loaded on ground alert aircraft. Aircraft diverted to attack immediate CAS targets may have ordnance that is not optimized for the mission.

D-5. Guns

The 20-mm M-61 Vulcan cannon is the standard gun for fighter aircraft. This cannon has six rotating barrels and a



OV-10 Air Force/Navy/Marines

Subsonic observation aircraft with light strike capability; used by forward air controllers; 3,600-lb ordnance load.

maximum firing rate of 6,000 rounds per minute. The 30-mm GAU-8 cannon in the A-10 has seven rotating barrels and can fire 4,200 rounds per minute. The most commonly used types of ammunition are high explosive incendiary (HEI) and armor-piercing incendiary (API). Most fighters carry guns internally (F-4C and F-4D carry pod-mounted guns) that may be used for strafing. Strafing employs the pinpoint accuracy of the gun against personnel, light materiel, and vehicles. In addition, the 30-mm AP round can penetrate tank turrets.

D-6. Rockets

Fighters carry 2.75-inch rockets in 19-tube pods. The F-4 can carry as many as 15 pods (285 rockets). The Air Force uses rockets as an area coverage weapon, firing entire pods at once. Navy and Marine fighters also carry 5-inch Zuni rockets for point targets. Rocket warheads include 10-pound HE; high explosive antitank (HEAT), which incorporates a shaped charge; high explosive antipersonnel (HEAP), which features a good fragmentation pattern; flechette, which expels thousands of steel darts when the rocket motor burns out; and white phosphorus, which is used for target-marking and incendiary effect.

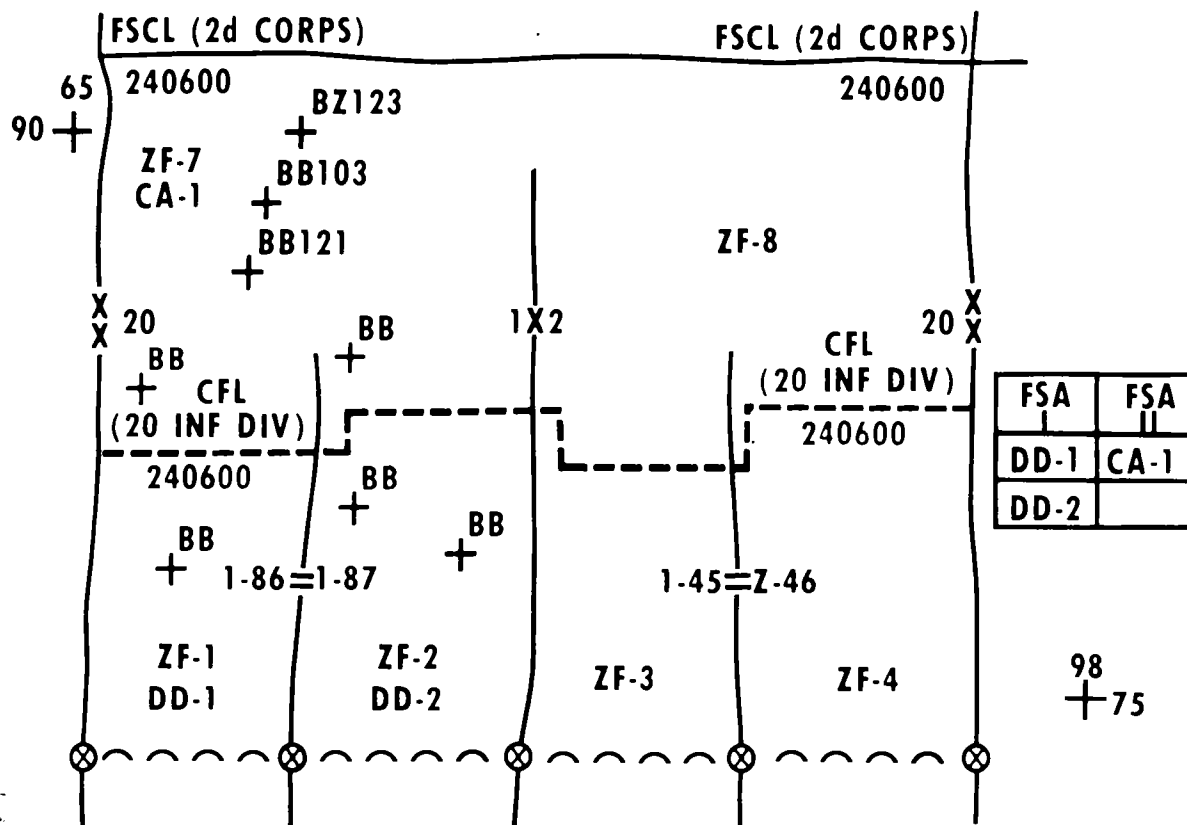


Figure E-2. Zones of fire target overlay.

These areas are called fire support areas (FSA) (fig E-3). The areas are given numbers (roman numerals) or names and are shown on the naval gunfire overlay in the NGF support plan. They are selected to provide space for the execution of the support mission

and for maneuver room to evade enemy fires. However, if sea space is restricted, it may prove advantageous to use fire support stations (FSS) (fig E-3) where the firing ships are placed and maintained in exact, predetermined locations.

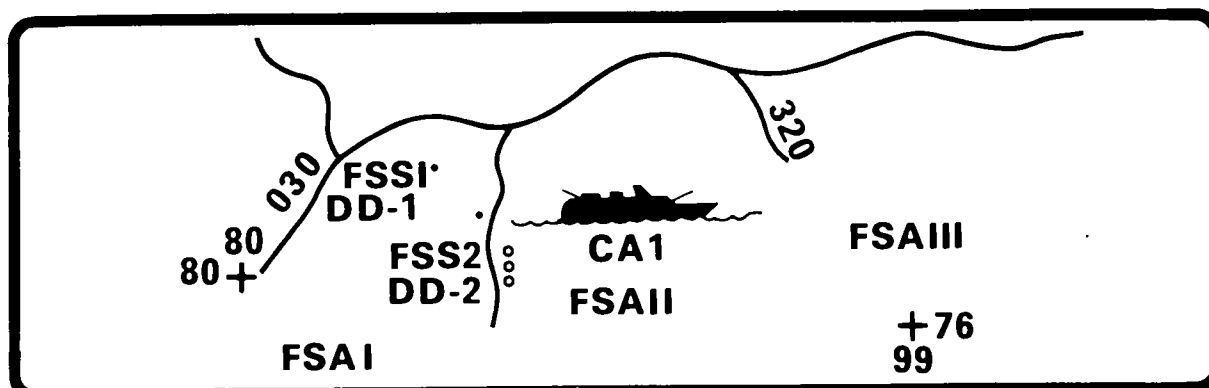


Figure E-3. Fire support areas and fire support stations.

(1) *Fire Support Areas.* A fire support area is a definite sea area assigned to a fire support unit or to an individual fire support ship in which to operate when executing fire missions. Fire support areas should be located in such a way as to minimize

interference with other ships operating in the same waters. They are selected considering hydrographic conditions, minefields, and antiaircraft and antisubmarine disposition to provide the best position with respect to range, line of fire, and observation.

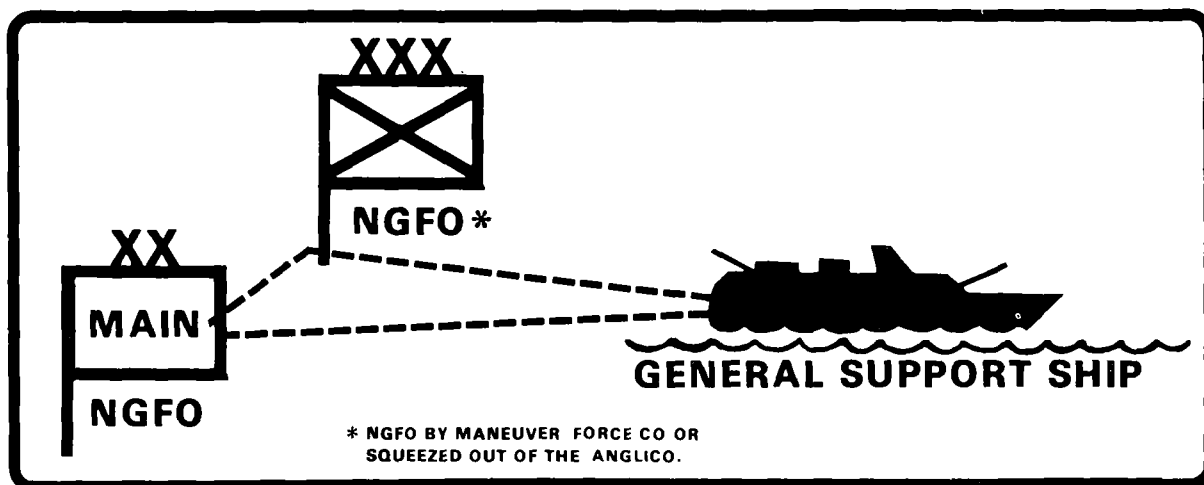


Figure E-4. Force naval gunfire support net.

(2) *Fire Support Stations.* A fire support station is a specific location in which a firing ship may be placed and maintained while providing fire support. It enables a ship to be stationed in areas in which maneuvering room is restricted. The assignment of a fire support station to a support ship greatly reduces its mobility.

E-10. Naval Gunfire Communications

Radio provides the primary means of communication for naval gunfire support. Several nets are normally established to control and coordinate this support.

a. Force Naval Gunfire Support Net

The force naval gunfire support net (HF: V/CW) (fig E-4) is established when the supported force consists of two or more divisions. The station of the force naval gunfire officer is the net control station, and the division naval gunfire officers and the

fire support ships in general support of the force guard the net. Brigade naval gunfire liaison officers (NGLO) enter this net in an emergency.

*NGFO provided by maneuver force CO or squeezed out of the ANGLICO.

b. Division Naval Gunfire Support Net

The division naval gunfire support net (HF: V/CW) (fig E-5) provides communication between the division naval gunfire officer (net control), the brigade naval gunfire liaison officers, and the ships in general support of these units. No naval gunfire radio net is established between the brigade naval gunfire liaison officers and the shore fire control parties at the infantry battalions. Communications between battalion and brigade are primarily by radio and wire over the maneuver communications system or the communications systems of other supporting arms representatives.

c. Naval Gunfire Ground Spot Net

The naval gunfire ground spot net (HF/VHF: V) (fig E-6) provides a circuit for

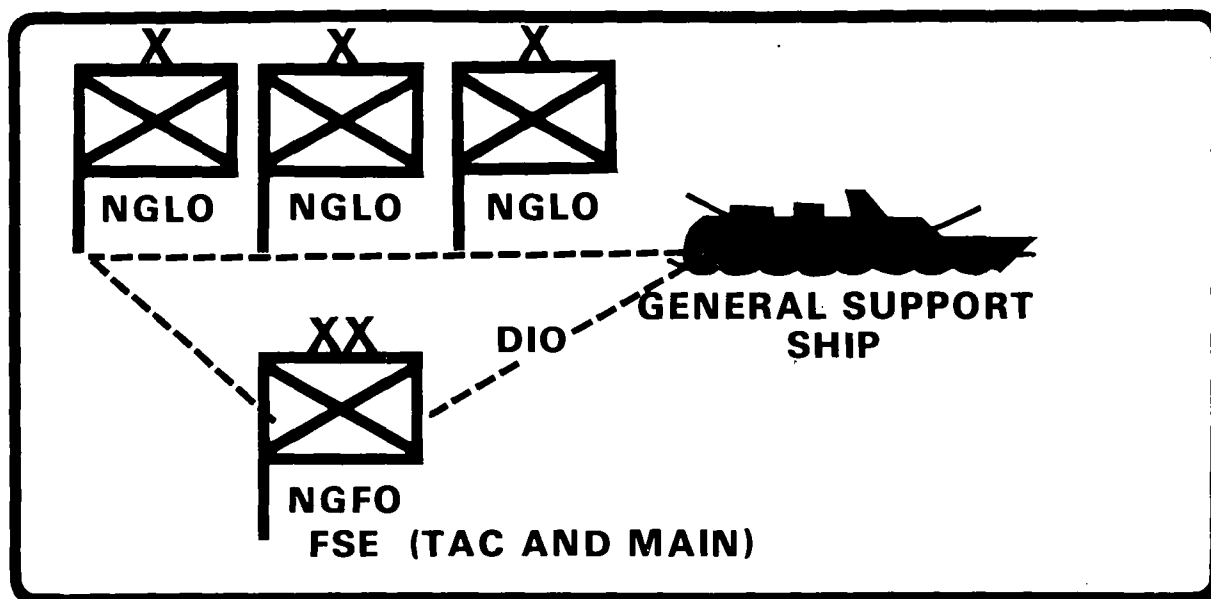


Figure E-5. Division naval gunfire support net.

requesting and adjusting naval gunfire. Included in the net are the naval gunfire spot team, the naval gunfire liaison team (battalion), and the direct support ship. The spotter sends his mission directly to the direct support ship with the naval gunfire liaison officer at the maneuver battalion FSE

monitoring the mission. This enables the FSE to stop the mission, if necessary for reasons of safety or other appropriate reasons (poor choice of weapon system, duplication of effort, etc.). If there is no reason to stop or delay the mission, it is approved by the FSE remaining silent.

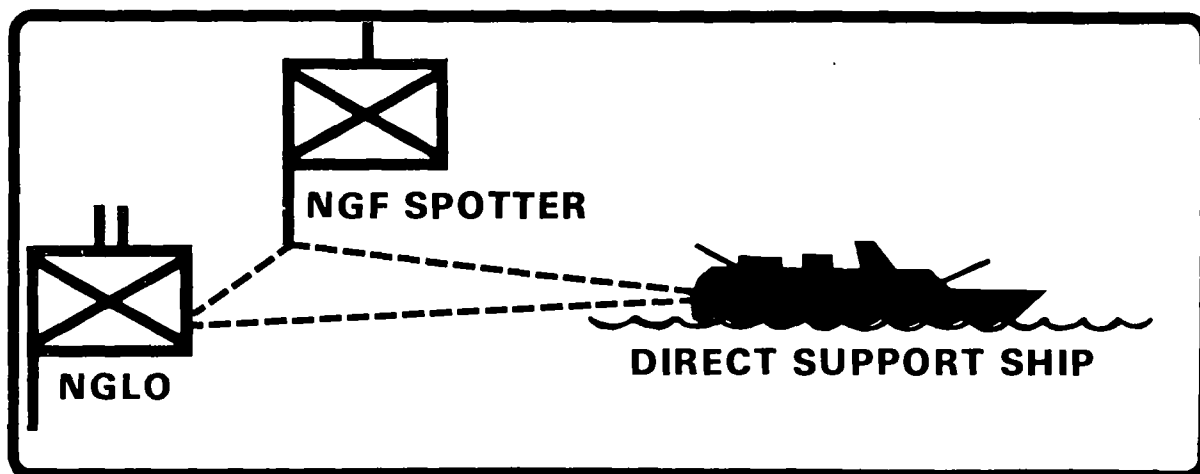


Figure E-6. Battalion naval gunfire ground spot net.

(1) If additional naval gunfire support is required, or a larger caliber of weapon (e.g., for destruction missions) is required for a particular mission, the battalion NGLO submits a request for such additional fire to the NGLO at the brigade FSE. If such a request is approved, it is assigned to a ship in general support of the brigade. The general support ship will either be directed to enter the appropriate shore fire control party (SFCP) ground spot net, or an airborne naval gunfire spotter will be assigned to facilitate control and adjustment of the mission.

(2) If an airborne spotter is used, the SFCP's spotter will have communications

with him and can assist him in locating the target and friendly frontlines.

d. Naval Gunfire Air Spot Net

The naval gunfire air spot net (VHF/UHF: V) (fig E-7) provides communications for an airborne spotter to adjust naval gunfire. Included in this net are the direct and general support ships, the airborne spotter, and the shore fire control party (NGLO). The appropriate landing force naval gunfire spot team and the naval gunfire liaison team monitor this net when the general support ships are being fired by the air operator.

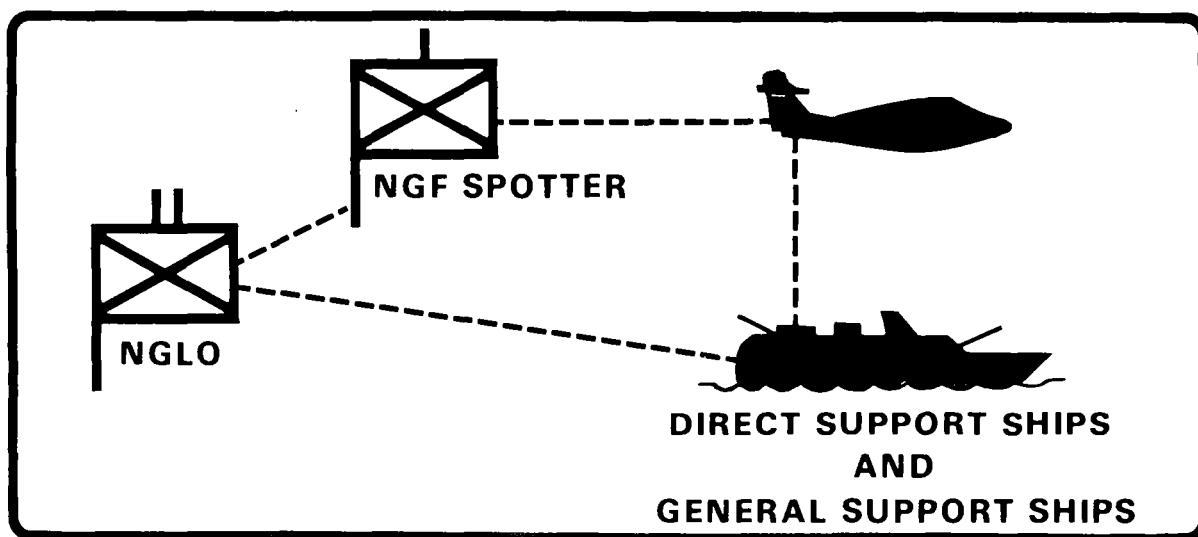


Figure E-7. Naval gunfire air spot net.

Appendix G Field Artillery Fire Support/Fire Direction Facilities, Resources and Duties

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Appendix G

Field Artillery Fire Support /Fire Direction Facilities, Resources, and Duties

Field artillery fire support and fire direction facilities range from the FIST at company level to the field artillery section (FAS) organic to HHC, corps. These facilities are the catalyst in making all fire support assets respond to the maneuver commander's needs. While operation of these facilities is the responsibility of the field artillery commander at each level, and the majority of the personnel and equipment come from FA units, their mission of executing total fire support warrants a discussion apart from the FA system.

Section I. FIRE SUPPORT FACILITIES

WHY

- ☐ The FSCoord must know about the fire support and fire direction facilities, their responsibilities, and their resources.

WHAT

- ☐ This appendix outlines:
 - the fire direction and fire support facilities that operate from company level to corps;
 - the resources of these facilities;
 - the duties of key people in these facilities.

G-1. Company/Troop

The FIST is the fire support organization at company/troop level. The organizations and equipment of the FIST for various company level units are shown in figure G-1. *Note to Reader:* Portions of TOE in this appendix are quite different from TOE for the same organizations published elsewhere. These differences reflect the personnel and equipment needed to get the job done and are the basis for recommended change to the TOE. For example, the new requirement to man a tactical and main FSE at division level simultaneously on a 24-hour basis generated a need for more personnel as reflected in figure G-5.

G-2. FIST Duties

- a. The FIST has five major duties:
 - ☐ Locate targets and request and adjust fire support.
 - ☐ Plan fires.
 - ☐ Coordinate fire support.
 - ☐ Report battlefield information.
 - ☐ Provide emergency control of CAS.
- b. The FIST chief serves as the FSCoord for the company/troop. In this

	Personnel					Equipment									
	LT FIST Chief	(E6) Fire Spt SGT	(E5) Forward Obs	(E4) Driver/RTO	(E3) RTO/FS Specialist	M151A2 (w/tlr)	M561	M113A1	AN/PVS-5 or -3	AN/TVS-5	AN/GRC-160	AN/PRC-77	AN/VRC-47	AN/GRA-39	KY-38
Tank Co (Less Lt Tank Co., Arm Bn, Abn Div; AC Trp, Sep Abn Bde)	1	1		1	2			1	1	1	2	1	1	2	1
Lt Tnk Co (Abn Div) AC Trp (Sep Abn Bde)	1	1		1	2		1		1	1	2	1	1	2	1
Rifle Co (Mech)	1	1	3	1	2			1	1	1	2	3	1	2	1
Rifle Co, Inf Bn Inf Div Sep Inf Bde Sep Lt Inf Bde	1	1	3	1	3	2			1	1	2	3	1	2	1
Rifle Co, Abn Inf*	1	1	3	1	3		1		1	1	3	3		2	1
Rifle Co, Ambl Inf Div	1	1	3	1	3	1			1	1	1	4	1	2	1
AB Personnel must be parachutists															

*Personnel must be parachutists.

Figure G-1. FIST.

capacity he plans and coordinates all fire support for the unit to which he is assigned. This includes developing fire support plans, numbering targets, and advising the commander on all fire support matters. Additionally, the FIST chief supervises the activities of his team, which is responsible for processing all types of fire requests and adjusting fire. He also acts as liaison officer for the supporting FA unit(s), keeps supporting FA units informed of changes in target priorities, and reports battlefield

information. He occasionally will be called to cue target acquisition assets.

c. Figures I-29 through I-32 in appendix I depict the options and communications nets available to the FIST.

G-3. Battalion/Task Force

The fire support section of the direct support FA battalion establishes a fire support element (FSE) to provide fire support

planning and coordination at the maneuver battalion/task force level.

a. The organization and equipment for the various types of sections are shown in figure G-2.

b. The FSO at battalion/task force level is the FSCoord and supervises the FIST's supporting the unit. He is the battalion/task force commander's principal adviser on fire support matters. He recommends allocation

of fire support, prepares fire support plans, assigns target numbers, and eliminates duplicate targets. He monitors requests for fire support and coordinates requests for fire. The FSO reports changes in the status of fire units and fire support requirements to maneuver and fire support commanders, insures maximum effectiveness of available fire support, and supervises the operation of the FSE.

	Personnel			Equipment									
	CPT FSO	(E7) Sr Fire Spt SGT	(E4) Fire Spt SP	M151A2 (w/tir)	M561	M577	AN/GRC-160	AN/VRC-46	AN/VRC-47	AN/VRC-49	AN/GRA-39	KY-38	AN/PRC-77
Inf Bn (Mech) Arm Bn AC Sqdn (Div)	1	1	2	1		1			1	1	2	1	
Inf Bn	1	1	2	1					1	1	1	1	1
Inf Bn (Abn)*	1	1	2		1		2	1			2	1	
Inf Bn (Ambl)	1	1	2	1						1	2	1	1

*Personnel must be parachutists.

Figure G-2. Fire support section, battalion level.

G-4. Maneuver Brigade

a. FS sections for the various maneuver brigades are shown in figure G-3.

b. The DS FA battalion commander is the brigade FSCoord. His full-time representative—the brigade FSO—remains at the brigade CP. There he supervises the battalion FSO's and he accomplishes the same advisory, planning, and coordinating tasks as those described for the FSO at battalion level (para G-3b).

c. A type layout for FSE at battalion/task force and brigade is shown in figure G-4. This layout varies with type DS FA battalion providing assets.

	Personnel			Equipment									
	(MAJ) FSO	(E7) Sr Fire Spt SGT	(E4) Fire Spt SP	M151A2 w/tlr	M577	M561	AN/VRC-46	AN/VRC-47	AN/VRC-49	AN/GRC-160	AN/PRC-77	AN/GRA-39	KY-38
Mvr Bde Mech Div Arm Div	1	1	2	1	1			1	1			2	1
Mvr Bde Inf Div	1	1	2	2 ^o					1		1	2	1
Mvr Bde* Abn Div	1	1	2			1	1			2		2	1
Mvr Bde Ambl Div	1	1	2	1					1		2	2	1
*Personnel must be parachutists													

Figure G-3. FS section for maneuver brigades.

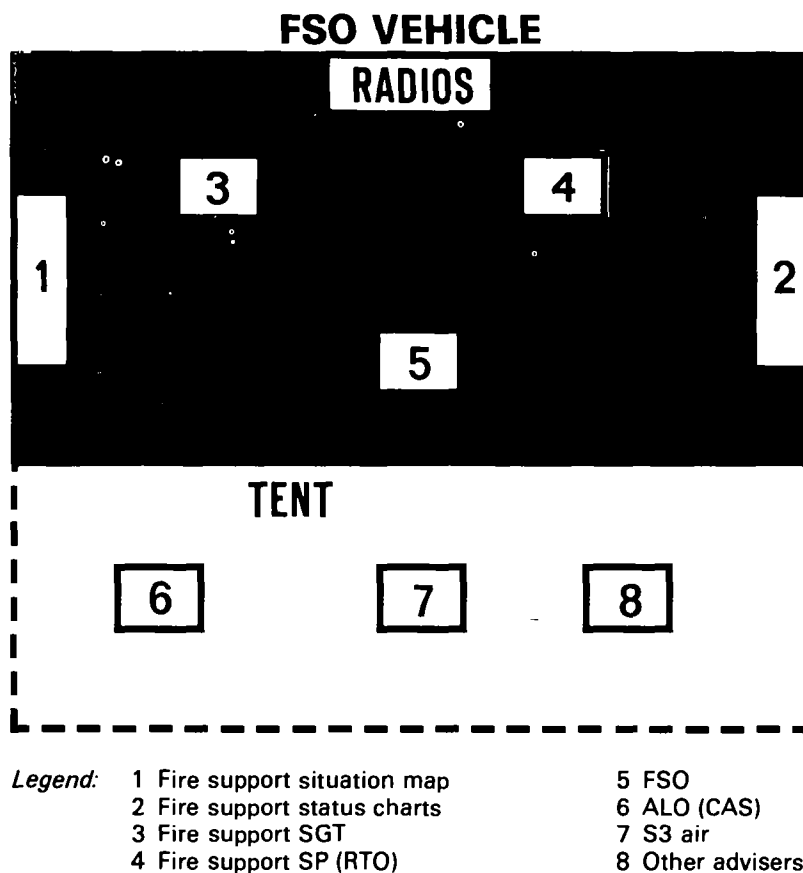


Figure G-4. Type layout for FSE at battalion/task force and brigade.

G-5. Division FSE's

a. Division command posts are divided into a tactical command post, a MAIN command post, and the division support area. FSE's operate at the tactical and MAIN command posts simultaneously and continuously.

b. Resources for FSE's come from the HHB, division artillery. Figure G-5 shows the assets required to operate FSE's for type divisions. These resources may vary slightly based on local conditions and command prerogative.

RESOURCE		FSE's					
		TAC FSE			MAIN FSE		
		ARM MECH INF	ABN	AMBL	ARM MECH INF	ABN	AMBL
PERSONNEL							
*AFSCoord SR	LTC	(1)	(1)	(1)	1	1	1
AFSCoord	MAJ	2	2	2	2	2	2
**FA Intel Off	MAJ				1	1	1
**FA Intel Off	CPT				1	1	1
Target Analysts	CPT				2	2	2
Ops SGT	E8				1	1	1
Intel SGT	E8				1	1	1
*RATT Tm Ch	E5	(1)	(1)	(1)	1	1	1
Sr F Spt SGT	E7	1	1	1			
F Spt SGT	E6	2	2	2			
RATT Opr	E4	2	2	2	2	2	2
F Spt SP	E4	2	2	2	2	2	2
Clk-Typist	E4	1	1	1	1	1	1
TOTALS		10 (2)	10 (2)	10 (2)	**15	**15	**15

**EQUIPMENT
VEHICLES**

CP carrier	1						
Trk 5/4-ton w/tlr		1	1	1	1	1	1
Trk 1/4-ton w/tlr	1	1	1	1	1	1	1
Trk 2 1/2-ton w/tlr					1		
Trk, van, 5-ton					1		

RADIOS

AN/VRC-46	2	2	2	2	2	2
AN/GRC-142	1	1	1	1	1	1
AN/GRC-39	2	2	2	2	2	2
KY-38	1	1	1	1	1	1

*Rotates between TAC/MAIN FSE's

**May operate at all-source intel facility

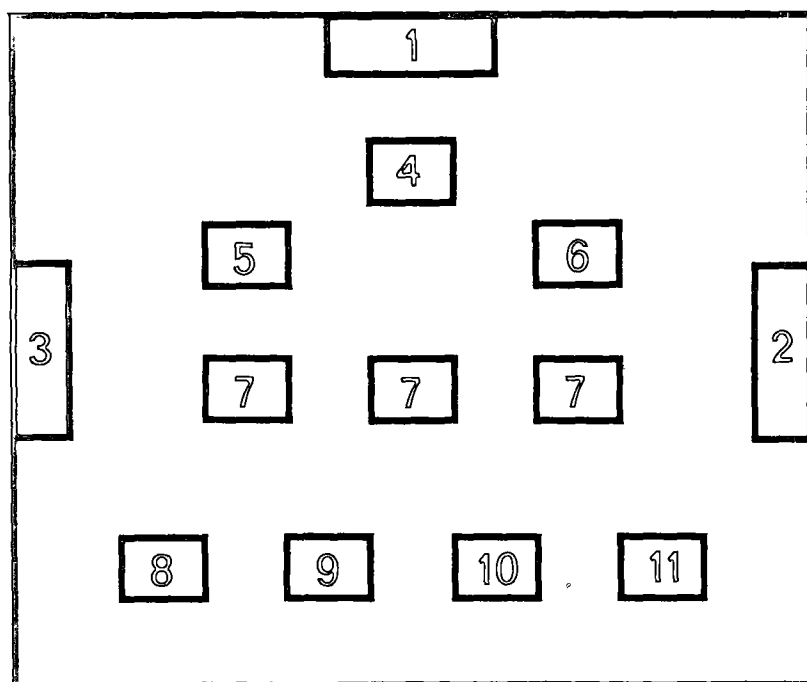
() Indicates not included in total for TAC FSE

Figure G-5. FSE personnel and equipment.

c. The AFSCOORD (div FSE's) serves full time as a FSCOORD at either the tactical or MAIN FSE of the division. The senior AFSCOORD alternates between the tactical and MAIN FSE as the division CG does. The duties of an AFSCOORD are to plan and coordinate all means of fire support, to insure that these fires complement maneuver plans, and to coordinate the execution of fires to

multiple means are safely used simultaneously within the same general locale. In addition, he supervises the operation of the FSE, advises on fire support matters, and provides the G3 with fire support inputs to plans (orders).

d. Layouts for type division FSE's are shown in figures G-6 and G-7.

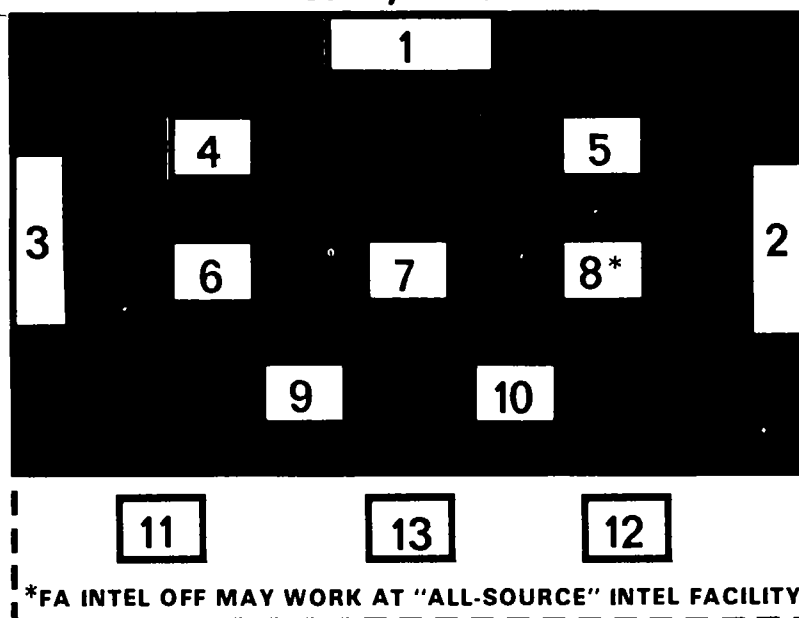


Legend:

1 Radios	7 Fire Support EM
2 Fire support status charts	8 ALO (CAS)
3 Fire support situation map	9 Clerk-typist
4 RTO	10-11 Other advisers
5-6 AFSCOORD's	

Figure G-6. Type division TAC FSE.

VAN, 5 TON



- Legend:**
- | | |
|------------------------------|--|
| 1 Radios | 8 *Intelligence/operations SGT's |
| 2 Fire support status charts | 9 AFSCOORD |
| 3 Fire support situation map | 10 Clerk-typist |
| 4 RTO | 11 Assistant G3 |
| 5 Fire support SGT | 12 All other fire support advisers (e.g., NGF) |
| 6 Target analysts | 13 ALO (CAS) |
| 7 Fire support specialist | |

*FA intel off may work at "all-source" intel facility.

Figure G-7. Type division MAIN FSE.

G-6. Corps FSE

a. The corps fire support element is manned with personnel from the corps field artillery section (FAS) of HHC, corps. Personnel and major equipment for the corps FSE are shown below. Personnel operate in two shifts.

Personnel

- 1 LTC Assistant FSCoord
- 2 MAJ Team chief
- 1 MAJ FA intelligence officer
- 2 CPT Assistant intelligence officer
- 4 CPT Target analyst
- 2 E8 Assistant operations SGT FSE
- 2 E7 TA/intelligence SGT FSE
- 2 E4 Intelligence specialist FSE
- 2 E4 Operations specialist FSE
- 2 E4 Clerk-typist

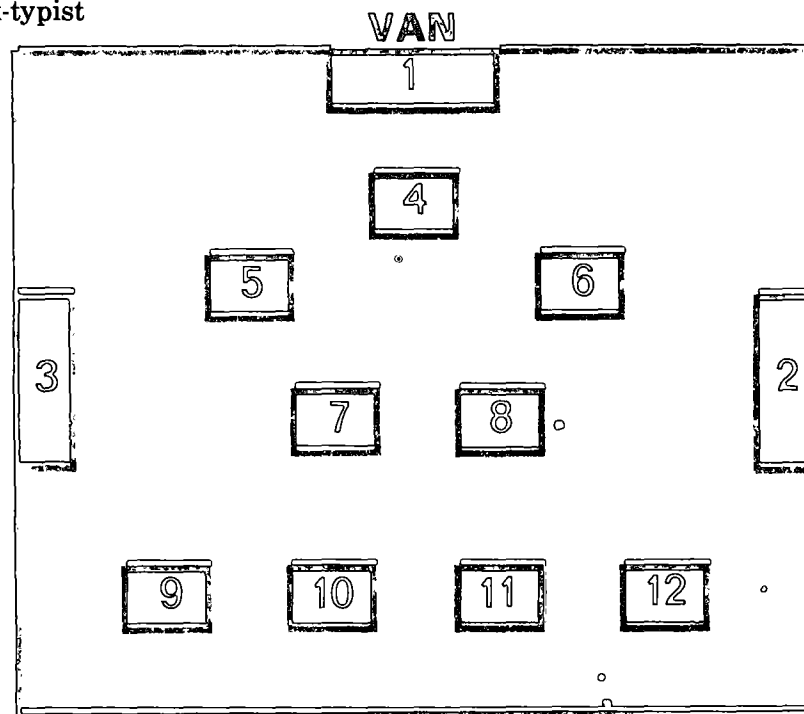
Major Equipment

- 2 Plotting set, artillery fire control
- 1 M37B1 w/tlr
- 1 Van, 5-ton exp M820 radios (provided by radio sec, HHC, corps)

b. The FSCoord at corps FSE performs basically the same duties as an AFSCoord at division except that at this level there is only one FSE. Configuration of the FSE is dependent upon local conditions and commander's prerogatives.

c. A type layout of a corps FSE is shown in figure G-8.

Note. Further information on the functioning of fire support facilities is included in appendix I.



- Legend:**
- | | |
|------------------------------|--------------------------------|
| 1 Radios | 7 Target analysts |
| 2 Fire support status charts | 8 Intelligence SGT/SP |
| 3 Fire support situation map | 9 Operations officer |
| 4 Clerk-typist/RTO | 10 ALO (CAS) |
| 5 Operations SGT | 11 AFSCoord |
| 6 Operations SP | 12 Other fire support advisers |

Figure G-8. Corps FSE.

Section II. FIRE DIRECTION FACILITIES

G-7. Battery FDC

a. The resources shown represent those for the armored/mechanized divisions within a regular (nonairborne) corps. For other types of divisions, assets may vary.

b. The personnel and major equipment found in a cannon battery FDC (DS FA bn) are shown below.

Personnel

- 1 LT FDO (AXO)
- 1 E6 Chief FD computer
- 1 E5 FD computer
- 3 E4 Chart operator
- 1 E4 CP carrier driver
- 1 E3 RTO

Major Equipment

- 1 Carrier, CP
- 1 Truck, 1¼-ton
- 1 FADAC
- 2 FD artillery set
- 2 Plotting board
- 1 Plotting set
- 2 Speech security set KY-38
- 1 Radio set AN/VRC-46
- 2 Radio set AN/VRC-47
- 3 Remote AN/GRA-39

c. Battery FDC duties are found in FM 6-40 series manuals. The battery FDC's primary role is technical fire direction—the conversion of calls for fire into appropriate fire commands. The battery FDC is run by the executive officer or the assistant executive officer. Specific duties of battery FDC personnel are included in FM 6-40.

G-8. Battalion Operations/FDC

a. Resources for the operations/FD section of the direct support FA battalion are shown below. Personnel operate in two shifts.

Personnel

- 1 MAJ S3
- 1 CPT Assistant S3/FDO
- 1 E8 Operations SGT
- 1 E8 Intelligence SGT
- 1 E7 Chief FD computer
- 1 E6 Assistant chief FD computer
- 1 E6 Chemical staff NCO
- 4 E5 FD computer
- 2 E4 Operations SP
- 2 E4 Chart operator
- 3 E4 CP carrier driver
- 1 E4 Clerk-typist
- 1 E4 Senior field switchboard operator
- 1 E3 Light vehicle driver
- *1 LT Intelligence officer
- *1 E5 Intelligence analyst

**May operate in BICC*

Major Equipment

- 3 Carrier, CP
- 1 Truck, 1¼-ton
- 1 Truck, ¼-ton w/trailer
- 1 FADAC
- 6 Radio set AN/VRC-46
- 3 Speech security set KY-38
- 1 Radio set AN/VRC-47
- 7 Remote AN/GRA-39
- 4 FD artillery set
- 3 Plotting board
- 2 Plotting set

b. The battalion FDC conducts both technical and tactical fire direction—the assignment of units to fire and fire control. At battalion the assistant S3, who is the battalion fire direction officer, plans, coordinates, and supervises the activities of the battalion and battery FDC's. He is also responsible for training FDC personnel, determining method of attack, issuing the fire order, and seeing that appropriate records are maintained. For specific duties of members of a battalion FDC, refer to FM 6-40, chapter 15.

G-9. The Division Artillery TOC

The division artillery TOC combines targeting, fire control, and fire direction functions. Its resources are shown below. TOE represented is for infantry, mechanized, and armored division artilleries.

Personnel

- 1 LTC S3
- 2 MAJ Assistant S3 (operations)
- 1 MAJ Assistant S3 (plans)
- 1 CPT Intelligence officer (BICC, MI)
- 1 CPT Counterfire officer
- *1 LT Counterfire officer
- 1 SGM Operations SGT
- 1 E8 Intelligence SGT
- 1 E8 Assistant operations SGT
- 1 E7 Chief FD computer
- 1 E7 Chemical staff NCO
- 1 E6 Senior intelligence analyst (BICC)
- 2 E5 Intelligence analyst (BICC)
- 2 E5 Senior chrono operator
- 2 E4 Chrono operator
- 3 E4 Operations SP
- 1 E4 Senior radio operator
- 2 E4 Clerk-typist
- 1 E3 RTO

*TAB XO

Notes:

1. Personnel subdivide into two shifts.
2. Additional personnel are available from the TAB.

Major Equipment

- 3 Truck, ¼-ton
- 3 Truck, 2½-ton
- 2 Van, 5-ton exp (M820)
- 7 Radio, AN/VRC-46
- 2 Radio, AN/GRC-142
- 1 Radio, AN/GRC-106
- 2 FD set
- 1 Plotting set
- 2 Radar chrono
- 6 Remote AN/GRA-39
- 6 Speech security set KY-38

G-10. Division Artillery TOC Duties

a. Division Artillery S3.

The S3 is responsible for operating the TOC. He advises the commander on all operational aspects of the division artillery mission. He recommends the field artillery organization for combat, positions for field artillery, and support for G3 elements; and coordinates with the division FSE's, corps field artillery operations sections, and lower level FDC's.

b. Assistant S3 for Plans.

This officer is responsible to the S3 for planning division artillery operations. He is concerned with

- target acquisition assets, ammunition (RSR), and types and amounts of fire support needed for future operations; and
- preparing the field artillery fire support plan and the target acquisition plan, based upon the division G3's estimate of the situation and the division commander's guidance.

c. Assistant S3 Operations Officer.

This officer is responsible to the S3 for proper functioning of the TOC during his shift. He directly supervises the counterfire officer and operations NCO. He must

- be totally familiar with the current situation and the commander's guidance;
- keep the S3 informed;
- provide current operations guidance to the counterfire officer and the operations NCO;
- insure compliance with division artillery OPSEC program; and
- insure proper execution of the FA support plan.

d. Counterfire Officer.

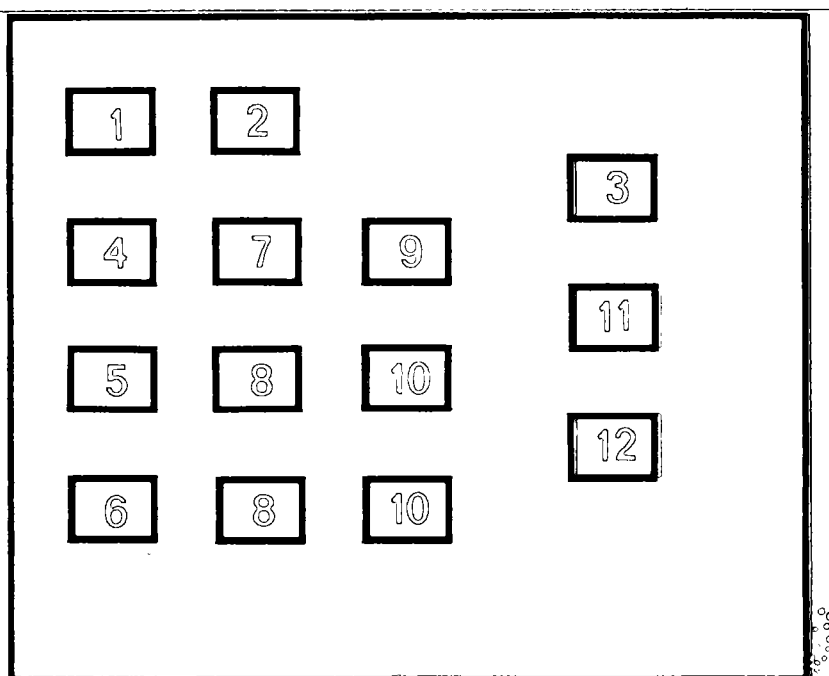
This officer is responsible to the operations officer for the proper functioning of the fire control and targeting elements during his shift. He must

- establish target selection standards based on the commander's guidance;

- direct or coordinate engagement of targets;
- insure compliance with the commander's restrictions and attack guidance; and
- remain current on enemy/friendly situation especially hostile indirect capabilities.

e. Working Relationships.

The division artillery TOC requires close working relationships between targeting, intelligence, and fire control personnel to acquire and attack targets. Figure G-9 reflects one shift for a TOC.



- Legend:**
- | | |
|---------------------------|--------------------|
| 1 Operations duty officer | 7 Fire control NCO |
| 2 CF duty officer | 8 Fire control SP |
| 3 Clerk-typist | 9 Targeting NCO |
| 4 Operations NCO | 10 Targeting SP |
| 5 Operations SP | 11 MI officer/NCO |
| 6 Operations SP | 12 MI EM |

Figure G-9. Division artillery TOC (one-shift).

G-11. Operations/Intelligence Element, Corps FA Section

The corps operations/intelligence element is manned with personnel from the corps field artillery section (FAS) of HHC, corps. Personnel and major equipment for this activity are shown below. Personnel operate in two shifts.

Personnel

- 1 MAJ Operations officer
- 2 CPT Assistant operations officer
- 1 MAJ Target acquisition staff officer
- 1 E9 Operations SGT
- 1 E8 Intelligence SGT
- 1 E7 Chief surveyor (APPS)
- 2 E6 Assistant operations SGT
- 2 E5 Operations SP
- 2 E5 TA/intelligence SP
- 2 E5 Survey computer (APPS)
- 2 E4 Clerk-typist

Major Equipment

- 2 FD artillery set
- 2 Plotting set
- 1 Radio, AN/VRC-46
- 1 Remote AN/GRA-39
- 3 Van, 5-ton exp (M820)

- 2 Truck, ¼-ton w/trailer
- 1 Trailer, ¼-ton

G-12. Duties of Key Operations Personnel (Corps)

a. Operations Officer.

This corps FA operations officer has overall responsibility for the functioning of the corps FA operations/intelligence facility. He recommends organization for combat of the corps artillery and the positioning GS elements.

b. Intelligence Officer.

This officer is primarily concerned with targeting for GS corps/artillery elements. He operates most of the time in the all-source intelligence facility to acquire such targeting information and passes it to the corps FSE, corps FAS, and operations element.

G-13. Corps Artillery Operations/Intelligence Element

Figure G-10 reflects a type layout for the corps artillery operations/intelligence element.

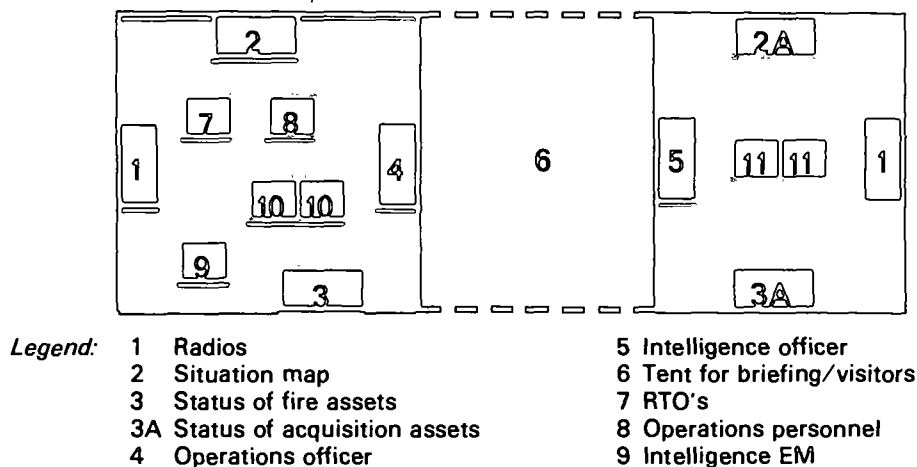


Figure G-10. Corps artillery operations/intelligence element.

Appendix H Fire Support Terms and Techniques, Aids and Documents

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Appendix H

Fire Support Terms and Techniques, Aids, and Documents

WHY

- To prepare the fire support plans, fire support coordinators at all levels must understand the terminology, techniques, and documents used in fire planning.

WHAT

- This appendix discusses:
 - fire planning terminology and symbology;
 - fire planning and coordination techniques;
 - fire planning and coordination aids;
 - fire planning and coordination documents.

Section I. TARGET TERMS AND TECHNIQUES

H-1. Definitions

Target is the most fundamental term used in fire support planning. Targets are classified in several ways.

a. A target can be personnel, materiel, or a piece of terrain that is designated and numbered for reference and/or firing. Every target can be classified as either a planned target or a target of opportunity.

b. A target of opportunity is one that has not been planned; i.e., one on which fire *has not been prearranged*. Since planning is concerned with prearranging fires on targets, the remainder of the discussion in this appendix will be devoted to planned targets.

c. A planned target is one on which fire is prearranged. The key is *prearranged*. The degree of prearrangement will vary but some prior arrangement has been made. Individually planned targets may be further subdivided into either *scheduled* or *on-call* targets.

□ A *scheduled target* is a *planned target* on which fire is to be delivered in accordance with a *time sequence*. The time sequence may be related to H-hour or any other time reference; however, once this reference has been established, the scheduled target will have a definite time sequence.

□ An *on-call target* is a *planned target* to be fired *on request* rather than in accordance with a time schedule. The purpose of an on-call target is to reduce the reaction time to initiate fires from that required for a target of opportunity. The degree of prearrangement of an on-call target will influence the reaction time from request to execution—the greater the prearrangement, the less the reaction time.

d. Priority targets are targets so designated by the maneuver commander by type, location, or time sensitivity. When he designates priority targets he should provide

specific guidance to the FSCOORD as to when certain targets become priority targets, when they cease to be priority targets, the desired effects on the target, and any special type ammunition to be used (e.g., smoke or VX). A priority target is one that the firing units lay on when they are not engaged in a fire mission. Generally, each priority target will have one battery laid on it. However, in dedicated battery operations, a platoon may be laid on a priority target while the remainder of the battery supports the maneuvering unit. An example of a priority target in a defensive situation is the final

protective fire (FPF). Further information on FPF's may be found in paragraph H-5(e).

H-2. Target Symbols

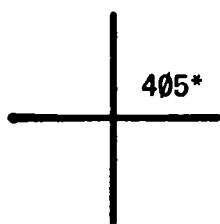
The use of symbology in the preparation of maps, charts, and overlays is basic to the military art. A completed discussion of general military symbols is presented in FM 21-30. The universal symbols used by the FSCOORD at all levels are those that designate targets. They are shown on the chart below:

TYPE OF TARGET

SYMBOL

DISCUSSION

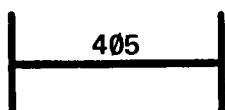
CONVENTIONAL



A cross is used. It may be canted if several targets are in close proximity to each other or when the symbol might be confused as a grid intersection. The intersection of the lines represents the center of the target. The target list, discussed later, describes the nature of the target and other pertinent information. (This symbology applies to targets planned for conventional ammunition.)

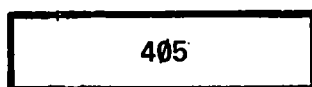
**Target number.*

LINEAR

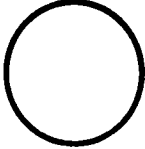
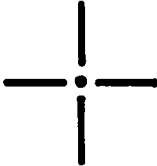


This symbol is for those targets that are long and narrow (e.g., roads and trenchlines). Coordinates shown on the target list are for the center point. The target list will also show the length and attitude.

RECTANGULAR



These targets have both length and width. Coordinates shown on the target list are for the center point. The length and width shown on the target list represents the overall length and width of the target.

TYPE OF TARGET	SYMBOL	DISCUSSION
CIRCULAR		This symbol represents an area type target. Coordinates shown on the target list are for the center point. The radius of the target is also included on the target list.
SPECIAL		This symbol is used for nuclear targets. The upper right quadrant has the target number. The lower right quadrant contains the weapon type and yield. The lower left quadrant contains the delivery unit and TOT. The upper left quadrant contains the HOB or HOB option.

Note. For FA planning, if the dimensions of the target exceed the width of an open sheaf, or a depth of 250 meters, consideration should be given to creating multiple targets and including them in a *group* (discussed in paragraph H-4).

H-3. Target Numbering

The target numbering system is used to designate a particular target, identify the headquarters that planned the target, and preclude duplication in the target planning effort. This appendix discusses the target numbering system in the context of its target numbering function only. Target numbers may be assigned by forward observers, fire support officers, fire direction centers, FA tactical operation centers, fire support elements, or maneuver commanders.

a. The target number is an alphanumeric designator consisting of a maximum of two letters and three numbers. The number of characters used will vary with the level at which the number is assigned and where the number is to be sent. The letters I and O are not used in the target numbering system in order to preclude confusion with the numbers 1 and 0.

b. The first letter of the target number is assigned by corps to identify major

commands and separate units. Units assigned an alphabetical designation and who are responsible for fire planning (e.g., separate brigades) may assign a second letter to their subordinate units as desired.

c. The second letter of the target number is assigned by division to identify major commands and selected fire planning elements.

d. The numerals of the target number are assigned by the brigade to identify major fire planning agencies. Units/elements that have been assigned an alphabetical designation (e.g., FA brigades, corps, and division fire support elements, and division artillery TOC) may use numbers as desired. Forward observers are assigned target numbers by the FSO with the maneuver battalion or task force from his block of numbers.

e. The letters and numerals are assigned by the various agencies in accordance with the allocations shown below. For illustration purposes, we will use target number AB101:

The first letter—A—designates a major command or separate unit.

A—G ••• Divisions in numerical order
 H ••• ACR
 J—W ••• Separate brigade/regiment
 X ••• Corps
 XA—XX ••• FA brigades and separate FA battalions

The second letter—B—indicates a subordinate planning element of a major command.

A—E ••• Brigades in numerical order
 Y ••• Division and corps artillery
 Z ••• Division and corps FSE

Within a brigade, numerals are allocated in numerical order as follows:

001-050 ••• Brigade FSO
 051-200 ••• TF FSO
 201-350 ••• TF FSO
 351-500 ••• TF FSO
 501-650 ••• TF FSO
 651-800 ••• TF FSO
 801-999 ••• DS FA battalion

For example, Target AB101, then, was designated by the FSO of the lowest numbered TF, of the 2d brigade, of the lowest numbered division in the corps.

f. The target numbering system is characterized by using only that portion of the entire target number required to identify a particular target to the fire support system responding to a request for fire.

□ Targets passed within a specific brigade need only be identified by three numerals since the alphabetical characters are implied.

□ When a forward observer transmits a request for fire during operations with a dedicated battery, he need only use the last two numerals of the target number if there is no duplication.

□ Targets passed outside the brigade will use the *second* alphabetical character and targets passed outside the division will use all *five* characters.

H-4. Multiple Targets

There are several FA fire planning techniques which are useful when fire is

desired on several targets. Groups, series, or programs of targets may be established in these instances. The manner in which each of these is graphically portrayed, the level at which it is established, and its purposes are discussed below.

a. Groups of Targets.

A group of targets consists of two or more targets on which simultaneous fires are desired. For FA fires, the DS battalion FDC is the lowest echelon that has the capability to plan and implement a group of targets. The FIST chief or fire support officer determining the need for a group of targets requests that the group be planned by his DS battalion fire direction center. The planning of groups of targets can be a time-consuming process requiring considerable firing assets; therefore, if the DS battalion does not have the assets available to fire the group, it may pass the request to the division artillery TOC for planning.

(1) A group of targets is graphically portrayed by circling the targets and identifying them with a group designation (fig H-1). The group designation consists of the letters assigned to the maneuver brigade or the division artillery TOC with a number inserted between them. For example, if the brigade is assigned the letters A and B, the first group of targets planned by the DS battalion FDC is designated A1B, the second group A2B, etc. Similarly, if the division artillery TOC has the letters A and Y, its first group is A1Y, the second, A2Y, etc.

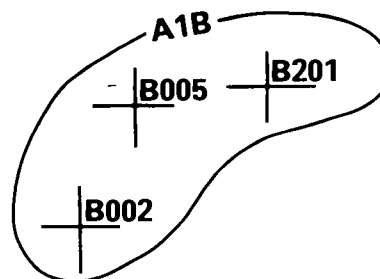


Figure H-1. Group of targets.

(2) The fact that targets are included in a group does *not* preclude the attack of individual targets within the group.

(3) A group of targets will always be depicted on a scheduling worksheet, and there may be more than one group on a scheduling worksheet. Groups of targets are normally fired on call of the requesting unit.

b. Series of Targets.

A series of targets consists of a number of targets and/or groups of targets planned in support of a maneuver phase. The DS FA battalion FDC is the lowest echelon authorized to form and designate a series of targets. A series of targets might be planned to support a limited attack, a final assault, a counterattack, or a phased withdrawal. It

should be planned to complement the maneuver commander's scheme of maneuver. It may be initiated on call, at a specific time, or when a particular event occurs.

Once a series is initiated, targets and groups of targets within the series are fired on a predetermined time sequence. Simultaneous engagement of targets in a group within a series is *not* mandatory. Phasing of targets within a series is as requested by the initiator or as determined by the FA fire planner based upon the nature of the targets and the desires of the force commander.

Graphically a series is shown as individual targets and/or groups of targets within a

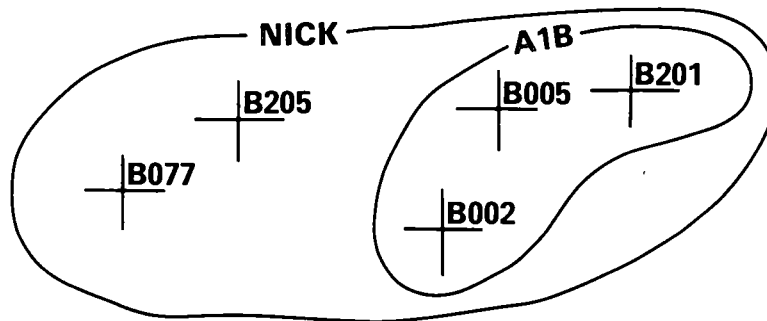


Figure H-2. Series of targets.

prescribed area. The series is given a code name or nickname as shown in figure H-2.

The fact that a series of targets has been formed does *not* preclude the attack of individual targets and/or groups of targets within the series. A scheduling worksheet will be prepared for each series of targets requested.

c. Program of Targets.

A program of targets is a number of planned targets of a *similar* nature. All targets in a particular program are of the same type (e.g., all ADA, all OP's, all mortar

targets, etc.). A program of targets may be initiated on call, at a specified time, or when a particular event occurs. Once a program is initiated, targets within the program are fired on a predetermined time sequence as listed in the schedule. A program is usually designated by its nature (e.g., counter OP program; counterfire program). The lowest echelon that normally designates and plans a program of targets is the DS FA battalion. There are no graphics to depict a program. They are shown on scheduling worksheets and schedules.

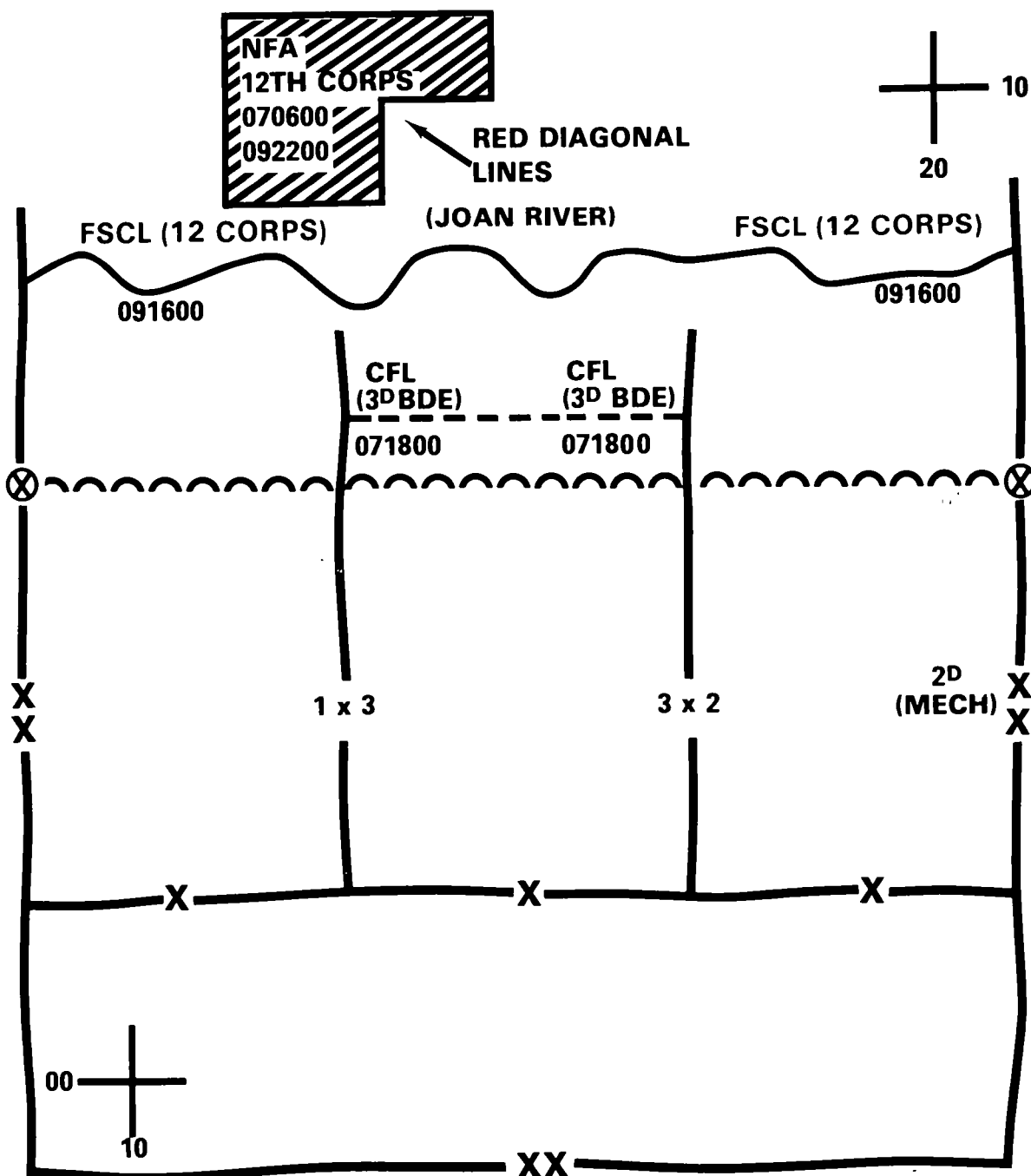


Figure H-6. Tactical situation overlay.

b. The Target Overlay (Fig H-7).

The target overlay shows the locations of targets, groups, and series as appropriate. It enables the FSCoord to graphically view all the targets planned in support of the

maneuver force. This overlay is one of the key documents used to produce the fire support plan and is discussed in that context in section III.

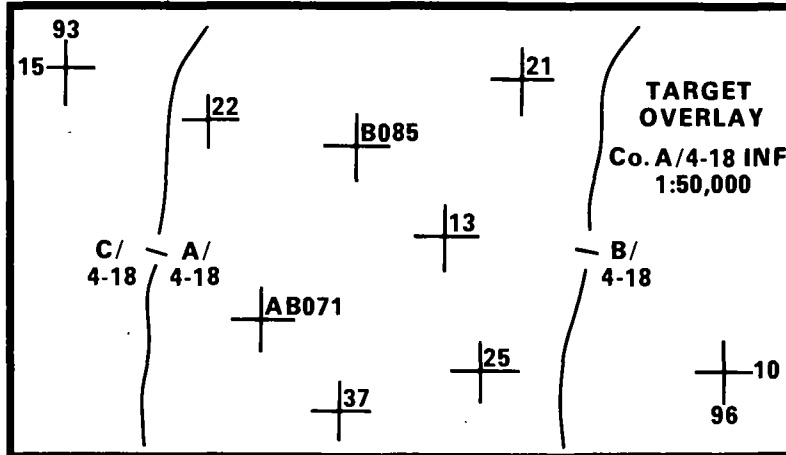


Figure H-7. Target overlay.

c. The Target Acquisition Capabilities Overlay (Fig H-8).

This overlay portrays the target acquisition coverage of the maneuver forces zone. It points up "dead spots" in the coverage and allows the planner to reposition assets to cover them.

d. Other Overlays.

Additional overlays may be prepared to portray a wide range of information, such as:

- ☐ contingency plans,
- ☐ flight corridors,
- ☐ counterfire targets,
- ☐ patrol plans, and
- ☐ air defense.

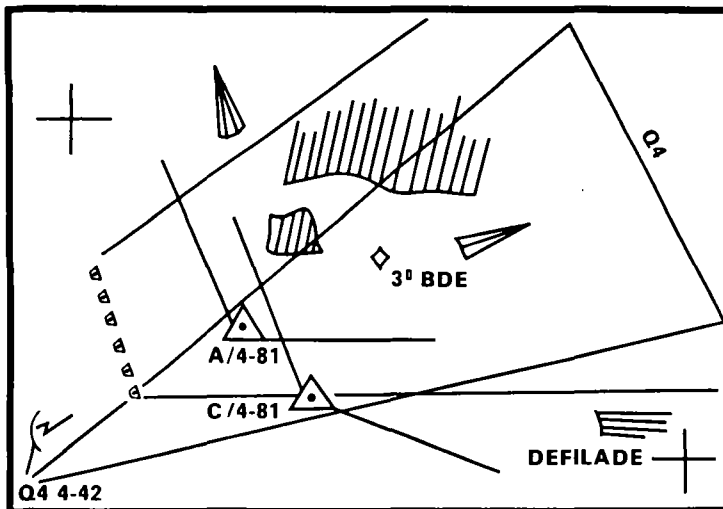


Figure H-8. Type target acquisition capabilities overlay.

H-10. The Gridded Thrust Line (GTL)

The gridded thrust line is a method of rapidly encoding and decoding a number of grid locations. The basic tool used to apply this technique is a clear plastic template. The template is labeled (fig H-9) using the gridded template coding table in the CEOI, and coded grid locations may then be read directly from it. The GTL technique is useful in situations where speed is essential and limited security is acceptable. Further discussion of the labeling and use of the template is included in FM 6-40-5.

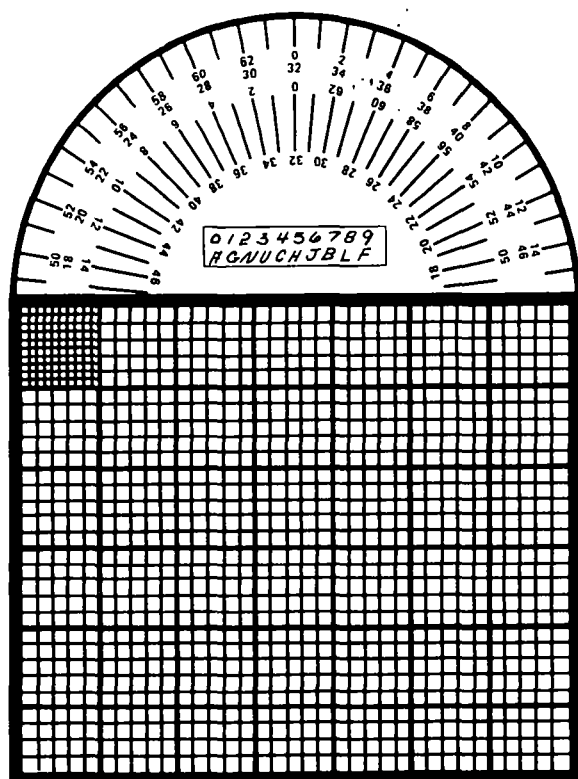


Figure H-9. Encoded gridded template.

Section III. FIRE SUPPORT DOCUMENTS

H-11. Fire Support Plan

The fire support plan contains the information necessary for understanding how fire support will be used to support the operation. The fire support plan will be a subparagraph of paragraph 3 of the OPORD, and should include a subparagraph for each fire support system involved. Nuclear and chemical fire support is discussed in separate subparagraphs to emphasize their use. Appropriate fire support representatives prepare each subparagraph and then the field artillery representative, as the fire support officer or fire support coordinator, compiles all fire support subparagraphs into the fire support plan. If the division fire support plan includes a target list, it will list only those targets that the division commander thinks are critical to division operations. Likewise, a target list in a brigade fire support plan will list only those targets the brigade commander thinks are critical to the brigade operation.

The fire support plan should not include "How to Implement" instructions to individual fire support agencies; information peculiar to each fire support means should be addressed in SOP's or implementing instructions subsequent to receipt of the fire support plan. If the operation requires lengthy or detailed plans or if paragraph 3 becomes unwieldy, a fire support annex may be prepared to amplify the instructions in the fire support plan.

H-12. Support Plans

a. When formal planning is taking place, specific agency support plans (e.g. FA support plan, NGF support plan, CAS plan, nuclear support plan, chemical support plan) are prepared as required to amplify the fire

(2) *Target overlay (fig H-7)*, discussed earlier, is a display of targets, coordinating measures, and artillery positions. It is used to aid in resolving target duplications, evaluating adequacy of planned support in relation to the scheme of maneuver or plan of defense, and in determining the most appropriate unit(s) to attack each target. It is not forwarded as part of the FA support plan to delivery units.

(3) *Scheduling worksheets (fig H-11)* depict the allocation of targets to firing units subordinate to the preparing field artillery headquarters. They also show when targets will be engaged and what type and amount of ammunition will be fired on each target. Scheduling worksheets will be prepared for series, groups, and programs. These worksheets are not part of the FA support plan, but are used to develop schedules that are part of the plan.

(PREPARATION for --d Div OPORD 20)			SCHEDULING WORKSHEET														REMARKS		
LINE NO	ORGANIZATION AND CALIBER	FIRING UNITS	-5	-4	-3	-2	-1	H	+1	+2	+3	+4	+5	+6	+7	+8		+9	+10
1	1-123FA	A	Z 217		Z 218		Y 005												
2	(155, SP)	B																	
3		C																	
4																			
5																			
6																			

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Figure H-11. Scheduling worksheet.

(4) *Target list (fig H-12)* is a compilation of targeting data planned to support an operation. It contains data extracted from the target list worksheet; however, it is in a

format easier to duplicate and transmit than is the target list worksheet. It contains only targeting data required for computation of technical fire data.

(CLASSIFICATION)

INCLOSURE 1 (TARGET LIST) TO FIELD ARTILLERY SUPPORT PLAN FOR 53d MECH DIV
OPORD 1-75

Reference: Map, Series L210, ZURANIA, Sheets 3061I (PILAK) and 3061II (KRAN)
Edition 01, 1:50,000.

<u>LN#</u>	(a) <u>TGT#</u>	(b) <u>DESCRIPTION</u>	(c) <u>LOCATION</u>
1	DB407	Susp Sig Cen	8761 8485
2	DB408	Rgmt CP	8360 8350
3	DZ217	Susp 122-mm How Btry	894 790
4	DA322	152-mm How Btry	933 795
5	DA323	Susp OP	889 802
6	DC257	122-mm How Btry	906 787
7	DY003	130-mm Gun Btry	937 822
8	DB409	Susp OP	948 812
9	DB410	Susp Rgmt CP	920 810
10	DY004	Bn CP	818 799
11	DZ218	122-mm How Btry	980 830
12	DZ219	152-mm How Btry	9482 8471
13	DZ220	Bn CP	918 420
14	DA324	AT Wpn Site	930 820
15	DA325	Bn Assm Area	796 822
16	DY005	122-mm How Btry	815 819
17	DY006	OP	986 751
18	DY007	OP	975 812
19	DB411	152-mm How Btry	9303 8072
20	DB412	Rgmt CP	8807 7615

* * * * *
Remarks:

Figure H-12. Target list.

(5) *Schedules (figs H-13 and H-14)* contain the same information depicted on scheduling worksheets. Schedules, however,

are in a format easier to duplicate and transmit to fire units than are scheduling worksheets.

(CLASSIFICATION)

INCLOSURE 2 (PREPARATION SCHEDULE) TO FIELD ARTILLERY SUPPORT PLAN 53d MECH
DIV OPORD 1-75

Reference: Map, Series L210, ZURANIA, sheets 3061I (PILAK) and 3061III (KRAN),
Edition 01, 1:50,000.

<u>LN#</u>	<u>(a)</u> <u>UNIT</u>	<u>(b)</u> <u>TGT</u>	<u>(c)</u> <u>ROUNDS</u>	<u>(d)</u> <u>TOT</u>
1	A/3-42	DZ218	36(a)	H-25
		DC257	6	H-19
		DY005	24	H-18
		DY006	18(b)	H-14
		DB409	18(b)	H-11
		DB412	36	H-8
		DB414	6	H-2
		DA326	42	H-1
		DC257	18	H-25
2	B/3-42	DZ219	24	H-22
		DY005	24	H-18
		DY007	18(b)	H-14
		DY004	18	H-11
		DB412	36	H-8
		DB414	6	H-2
		DA326	42	H-1
		DC257	18	H-25
		DZ219	24	H-22
3	C/3-42	DY005	24	H-18
		DA323	18(b)	H-14
		DY004	18	H-11
		DZ220	24	H-8
		DB413	18	H-4
		DA326	42	H-1
		DA322	12(a)	H-25
		DB411	20	H-19
		DB407	12	H-9
4	A/3-43	DA324	4	H-3
		DA327	16(a)	H-1
		DY003	20(a)	H-25
		DZ217	12	H-15
		DB408	12	H-9
5	B/3-43	DA324	4	H-3
		DA327	16(a)	H-1
		DA322	12(a)	H-25
		DB411	20	H-19
		DB407	12	H-9
6	C/3-43	DA324	4	H-3
		DA327	16(a)	H-1
		DB415	20(a)	on-call

NOTE: Last rounds impact NLT H-hour

Figure H-13. Preparation schedule.

(CLASSIFICATION)

INCLOSURE 3 (SERIES PAUL SCHEDULE) TO FIELD ARTILLERY SUPPORT PLAN FOR
53d MECH DIV OPORD 1-75

Reference: Map, Series L210, ZURANIA, Sheets 3061I (PILAK) and 3061II
(KRAN), Edition 01, 1:50,000.

<u>LN#</u>	(a) <u>UNIT</u>	(b) <u>TGT</u>	(c) <u>ROUNDS</u>	(d) <u>TOT</u>
4	A/3-43	DB410	12	0
		DA327	12	+5
5	B/3-43	DA324	8(a)	0
		DA326	16	+3
6	C/3-43	DA325	16(b)	0

Remarks:

(a) 50% VT

(b) FZ VT

Figure H-14. Series Paul schedule.

H-13. Summary

This appendix is a brief overview of the tools, aids, and documents used by the FSCOORD in his day-to-day operations. Appendix I contains detailed discussion of how to prepare the documentation and write the fire support plan; it also gives the sequence of action by FSCOORD's at various levels.

Appendix I

Fire Support Planning and Coordination

Fire support planning and coordination are separate and distinct functions that occur simultaneously at all levels from company to corps. Planning is *how* to use fire support assets; coordination is all the actions necessary to *make the plan happen*. *Fire support planning* is the continuous and concurrent process of analyzing, allocating, and scheduling fire support and integrating it with maneuver to optimize combat power.

Section I. PLANNING AND COORDINATION FACILITIES

WHY

- Fire support planning and coordination *drive* the fire support system to respond to the force commander's requirements. The FSCoord must understand planning and coordination to generate the most support from the system.

WHAT

- This appendix tells you:
 - the fire support elements involved in the planning and coordination process;
 - how formal fire support planning is conducted and the documents produced;
 - how informal fire support planning is conducted;
 - how fire support coordination is accomplished.

I-1. General

Fire support planning and coordination are functions of command delegated by the force commander to the senior FA representative present with his force. At corps, division, and brigade levels, the commander of the supporting FA (corps artillery commander, division artillery commander, and the commander of the DS FA battalion) is the FSCoord, responsible to the force commander for the efficient and effective use of *all* fire support means. At battalion and company levels, the FSCoord is a representative of the DS FA battalion commander. At each echelon from corps to company, the FSCoord establishes a facility to perform the planning and coordination of fire support. These facilities are collocated with the operations center at each echelon as shown in figure I-1.

These facilities provide full-time personnel on duty for planning of fires and the day-to-day, mission-by-mission coordination of those fires in compliance with the guidance of the force commander and the FSCoord. Armored cavalry regiments and squadrons have their own organic fire support officers. For a specific breakdown of the personnel and major items of equipment in each facility, see appendix G of this manual.

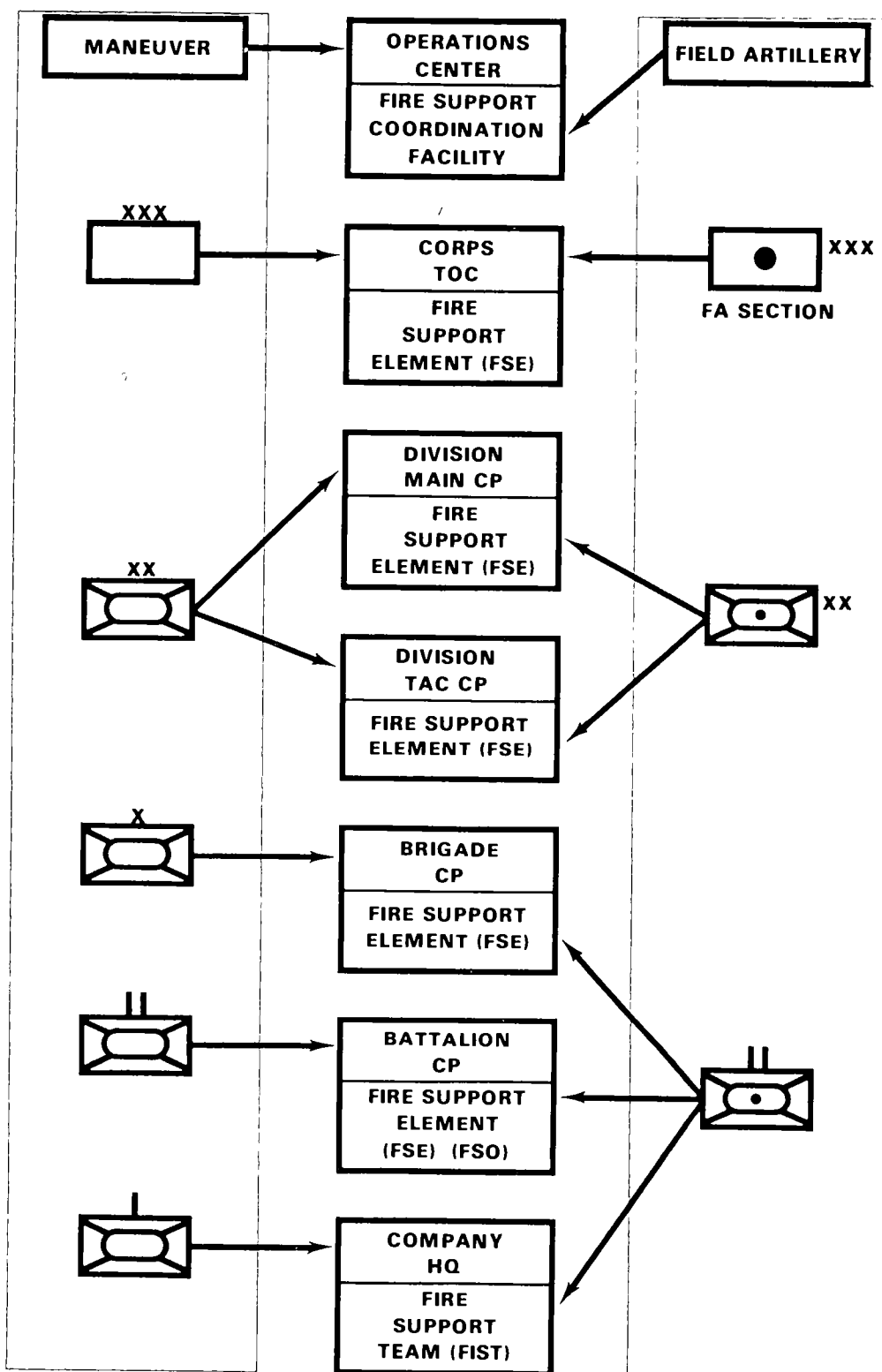


Figure I-1. Fire support coordination facilities.

I-2. Corps FSE

Corps FSE is manned with personnel from the corps FA section, HHC, Corps, and is the facility to plan and coordinate fires at the corps level. The FSE works with the fire support element (FSE) of the division. The senior assistant FSCoord (AFSCoord) is responsible for the functioning of the FSE and is the full-time coordinator at the facility. Intelligence representatives work in the corps FSE and in the corps all-source intelligence facility to acquire and process *targeting* information for fire support operations. Target analysts work on planning and coordinating nuclear packages and toxic chemical fires. They also function as assistant FSCoord's for the continuous operation of the FSE.

I-3. Division FSE's

There are two FSE's at division, one at the division MAIN CP and one at the division TAC CP. The TAC FSE concentrates on the commander's needs for *immediate or near immediate fires*; the MAIN FSE is concerned with *formal fire planning*. The AFSCoord is responsible for the planning and coordination of fires at both FSE's. He rotates between them, stationing himself where the situation dictates. Target analysts and artillery intelligence officers are available in the MAIN FSE. The two FSE's coordinate closely with each other and with the division artillery TOC. FSE's are normally delegated the authority to override the fire support requests of subordinate fire support facilities. In each FSE, there are representatives of the other fire support means (CAS, NGF, etc.) who advise the FSCoord on the use of their assets.

I-4. Brigade FSE

The fire support element in the brigade CP

is operated by the fire support officer (FSO) from the DS FA battalion. The brigade FSE works closely with the FDC of the DS battalion, with the FSE's at maneuver battalion, and with the division MAIN and TAC FSE's. The FSO, brigade S3 air, and representatives of the other fire support means are collocated within the brigade FSE. The brigade FSE is involved in the planning and coordination of all fire support for the brigade.

I-5. Battalion FSE

The FSE at each of the maneuver battalions is also supervised by an FSO from the DS FA battalion. The FSO, battalion S3 air, mortar representative, and advisers from the other fire support means are collocated within the battalion FSE for the planning and coordination of fire support. The battalion FSE coordinates and works closely with the brigade FSE's, the FSE's of other battalions, the DS FA battalion FDC, and FIST's at company level. The FSO supervises the operations of the FIST's.

I-6. Company FIST

The FIST and its integral FO sections provide the fire support planning and coordination required by the company; the FIST's are provided by the DS FA battalion. Occasionally, spotter teams for naval gunfire (NGF) and forward air controllers (FAC) for close air support (CAS) will collocate at the company to advise and assist in the use of their assets. The FIST is supervised by an FA lieutenant who is the primary FO for the company and who also serves as the commander's FSCoord. By careful management and effective use of his team personnel, the FIST chief plans and coordinates the fire support for the company with no degradation of his habitual role as the FO. In this manual, the FIST chief is

discussed in his role as the FSCOORD. For a complete discussion of the FIST chief as an FO see FM 6-40-5, *Modern Battlefield Cannon Gunnery*.

At each echelon, the FSCOORD and his

fire support element personnel are advised in the use of the various fire support means by representatives of these means. At maneuver battalion and higher, advisers are available to the FSCOORD as depicted in figure I-2 and discussed below.

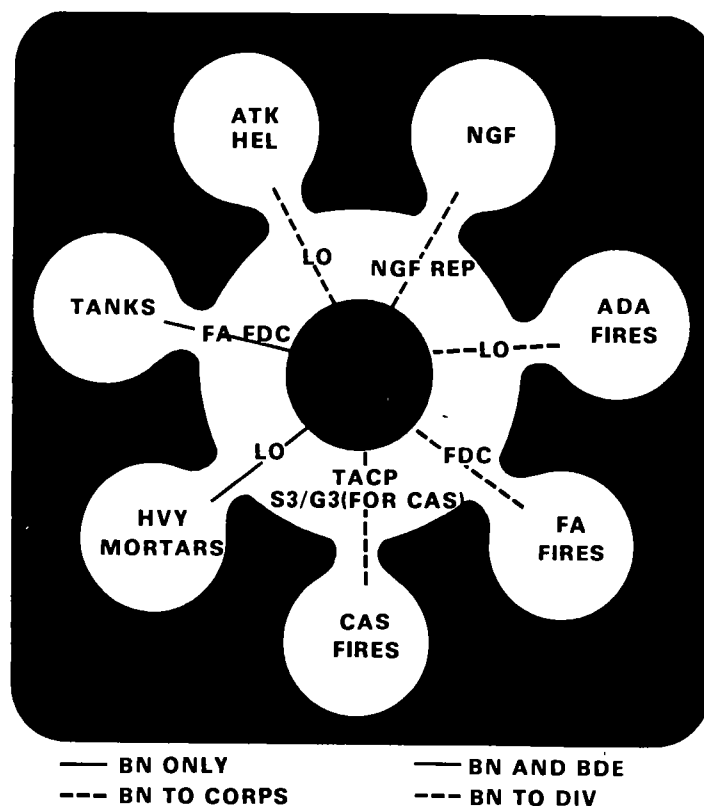


Figure I-2. Fire support advisers.

- *FA fires.* FSCOORD's usually deal directly with an FA fire direction center (FDC/TOC), which advises on the status of FA support available.
- *Tank fires.* When tanks are used as an indirect fire means, information on the status of these fires is available from the host FA FDC and the tank liaison representative collocated there.
- *Mortar fires.* When heavy mortar fires are used in overall fire support operations, a liaison representative from the heavy mortars collocates within the FSE at

maneuver battalion and advises on the capabilities and limitations of his mortars.

- *ADA fires.* If Nike Hercules or Vulcan attacks surface targets with indirect fires, an LO is stationed at appropriate fire support facilities to advise on the best use for these fires.

- *CAS fires.* Advice on uses for CAS fires comes from representatives of the support air force Tactical Air Control Parties (TACP) and from the force S3/G3 representative responsible for CAS.

- *Attack helicopters.* When these fires are

allocation of assets, positioning of weapons, assignment of missions, programs of fires, and the target lists derived from planning. These priorities are valid for the situations and the echelons for which they are established.

I-13. Categories

Fire support planning may be *formal* or *informal* based on the echelon at which the planning occurs and the time available.

a. *Formal planning* is a deliberate process that essentially flows from the *higher echelons to the lower* (fig I-4). Formal planning involves a detailed consideration of what fire support is available, how to obtain it, and how maneuver and fire support are to be integrated. This type of planning deals with specific operations and, at brigade and higher levels, normally results in a written fire support plan that is disseminated from higher to lower headquarters as part of the commander's OPOD.

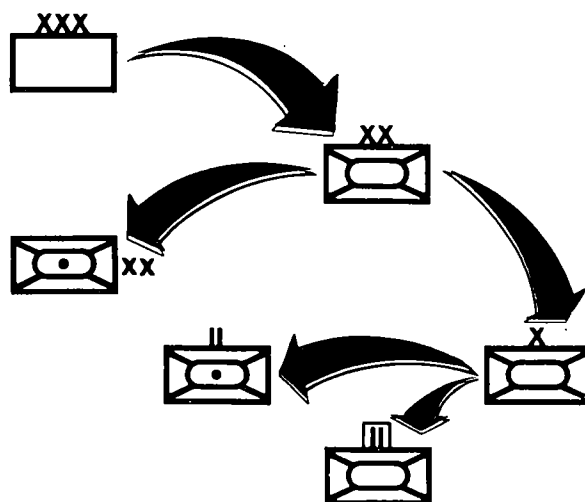


Figure I-4. Formal fire support planning.

b. *Informal planning* is a far more dynamic process that responds to the *immediate* problems on the battlefield. Generally, it flows from *lower to higher* echelons (fig I-5) and is done primarily at the maneuver company and battalion. Informal planning—like formal planning—is a product of the time available and the echelon for which it is devised. Because it is a spontaneous process tied to the immediate situation in battle, informal planning will normally be done orally rather than in writing. The *purpose* of informal planning is the same as that of formal planning: to optimize the *commander's combat power*.

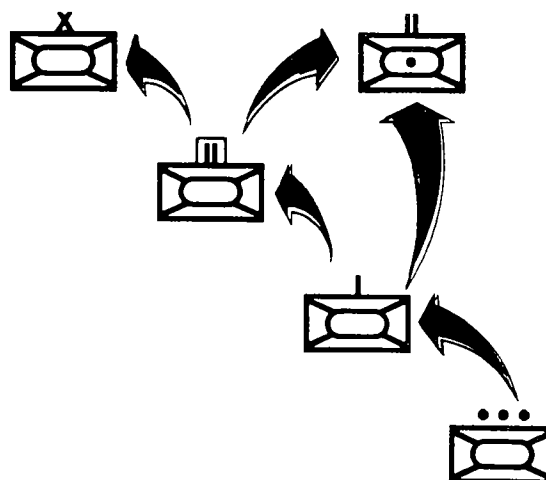


Figure I-5. Informal fire support planning.

Section III. FORMAL FIRE SUPPORT PLANNING

I-14. Planning Responsibilities

The FSCoord is the commander's fire support planner; he works in close coordination with the commander's primary staff—especially the operations officer, G3/S3—and with the other members of the fire support facility. The planning functions and responsibilities of the facilities involved in formal fire support planning are discussed in the following paragraphs.

a. Corps FSE.

The corps FSE plans the use of fire support for the corps as a whole and plans the fires of those fire support means retained under control of the corps commander. These means may include CAS and NGF as well as Lance and Pershing. If Nike Hercules missiles are used in the surface-to-surface role, their fires are planned at the corps FSE. The FSE receives targeting information from the corps all-source intelligence center (i.e., the electronic warfare intelligence operations center-EWIOC), the division, and other corps maneuver elements. Fires are planned on all targets of interest to the corps as well as those that are beyond the capability of the divisions. The corps FSE tasks the FSE's at the division MAIN CP's through corps plans and orders.

The major effort of the corps FSE is devoted to the planning and coordinating of nuclear and chemical weapons operations within the authority granted by the corps commander. This is done in conjunction with the division MAIN FSE's. Chapter 6 of this manual and paragraphs I-21 and I-22 of this appendix discuss nuclear and chemical planning in detail.

b. Division MAIN FSE.

The division MAIN FSE exchanges target information with intelligence agencies and other fire support facilities (e.g., division all-source intelligence center, division artillery

TOC, corps FSE) to develop targets to be fired by division assets or passed to higher or lower echelons. The MAIN FSE approves targets planned by the brigade FSE's for engagement by fire support means other than FA that are outside of brigade assets; requests for additional FA fires are processed through FA fire direction channels. Duplications are resolved. The MAIN FSE is not engaged in the immediate battle as is the TAC FSE, and normally plans fire support for future operations. Through plans and orders, the MAIN FSE tasks the division artillery and all other fire support means under division control (CAS, NGF, etc.) to provide fire support. The plans developed by the MAIN FSE are a part of the division's operations plans and orders.

The MAIN FSE is also deeply involved in nuclear and chemical weapons planning. It plans the division nuclear subpackages which are sent to the corps FSE for inclusion in the corps package. MAIN also plans chemical fire support, prepares the nuclear and chemical fire plans, and tasks subordinate units to deliver nuclear and chemical fires.

The FSE at the division TAC CP is concerned with current operations and immediate needs. The TAC FSE is primarily a coordinating facility and does not normally conduct formal fire planning. TAC FSE can request the MAIN FSE to plan targets for future operations.

c. Brigade FSE.

The brigade commander is primarily concerned with targets critical to the brigade operation. It is the responsibility of the FSCoord to insure that fire support capabilities are an integral part of the commander's planning and decisionmaking process. The brigade FSE consolidates fire support planning requests from the battalion FSE's, resolves duplications, adds brigade targets, and—in conjunction with the brigade S3—recommends these targets be included in the fire support plan. This forms the basis for the fire support plan.

The FSCoord then directs the personnel in the brigade FSE, including representatives from other fire support systems, to develop a coordinated fire support plan that will meet the fire support needs of the brigade for the operation. The resulting brigade fire support plan is part of the brigade OPLAN/OPORD and tasks subordinate and supporting fire support systems. The brigade FSE keeps the DS battalion, subordinate FSE's, and representatives of the other means informed of changes to brigade plan.

The remainder of this section discusses this plan—how it is prepared, who it is disseminated to, and who is responsible for this action.

I-15. Preparation of the Fire Support Plan

a. The commander's selected course of action, his concept of the operation, and all guidance given during the planning process form the basis for the development of the OPORD. Paragraph 3 of the OPORD outlines *how* the commander wants to use his fire and maneuver assets and includes the fire support plan (fig I-6). Tab A of this appendix depicts a sample division OPORD with its fire support plan.

b. The FSCoord prepares the *fires* portion of the concept of operation and coordinates the preparation of the *fire support subparagraph*, which constitutes the fire support plan. The fire support plan includes a subparagraph for each fire support agency involved in the operation. Input for these subparagraphs comes to the FSCoord from the appropriate fire support representatives within the FSE's (fig I-7). If the fire support plan requires amplification, a fire support annex is prepared. Tab B of this appendix depicts a sample division OPORD in which paragraph 3 is amplified by a fire support annex.

c. The fire support plan for a given force

headquarters will not be dependent on target input from subordinate elements. Instead it will tell subordinate commanders what they are to do and what they need to know to accomplish their missions. The plan should not address items contained in the SOP and should not include "how to implement" instructions to individual fire support agencies; e.g., instructions to the FA on how to attack a particular target. Information

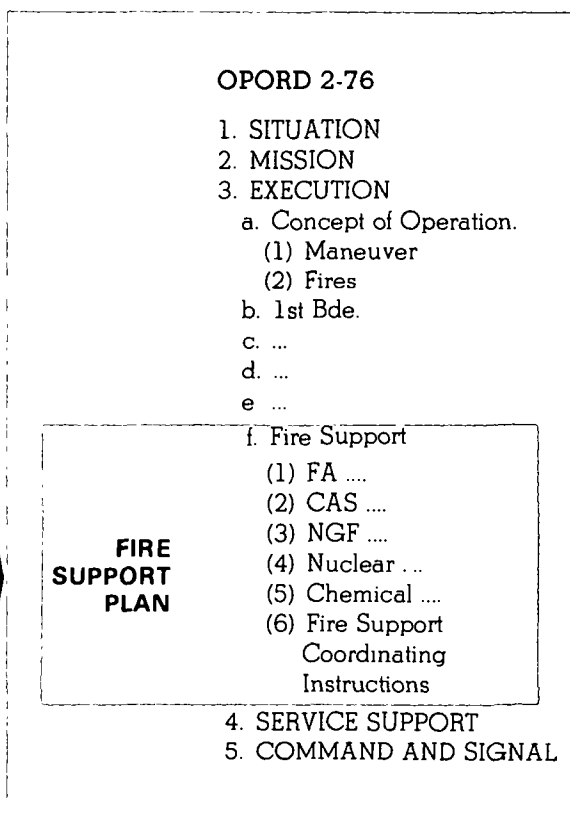


Figure I-6. OPORD and fire support plan.

peculiar to each fire support means should be addressed in its SOP's or in implementing instructions subsequent to receipt of the fire support plan. This can be accomplished through the publication of separate support plans; e.g., FA, NGF, and CAS, are prepared by the representative of each agency and are disseminated through the agency's channels (figs I-7 and I-8).

LEVEL	AGENCY	INDIVIDUAL RESPONSIBLE	Fire Support Plan	Fire Support Annex	FA Support Plan	CAS Plan	NGF Plan	Nuclear Spt Plan	Chemical Spt Plan
Corps	FSE	FSCoord*	☒	☐					
	NBCE	Chemical Officer							
	Opns Elm of Corps FA Sec	FA Operations Officer							
	TASE	G3 Air***				☐			
Division		FSCoord*	☒	☒				☐	
		Asst G3 (For CAS)**				☐			
	MAIN FSE	Naval Gunfire Officer (NGFO)							
	Div Arty TOC	Div Arty S3							
	NBCE	Chemical Officer							
Brigade		FSCoord***	☒	☐					
		S3 Air**				☐			
	FSE	Naval Gunfire Liaison Officer (NGLO)							
		Chemical Officer							
	DS FA Bn FDC	DS Bn S3							
*Normally accomplished by assistant FSCoord. **Assisted by USAF representative. ***Normally accomplished by the FSO									

Figure I-7. Formal fire planning responsibilities.

OPORD

1. SITUATION
2. MISSION
3. EXECUTION
 - a. Concept of Operation.
 - (1) Maneuver
 - (2) Fires
 - b. 1st Bde.
 - c. 2d Bde.
 - d. 3d Bde.
 - e. Fire Support
4. SERVICE SUPPORT
5. COMMAND AND SIGNAL

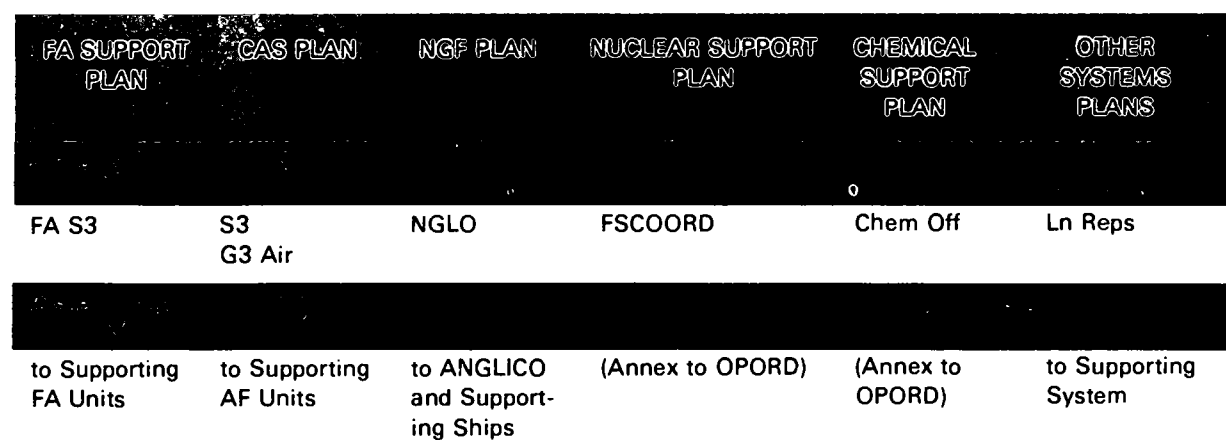


Figure I-8. Fire support plan.

d. An illustration of a fire support plan for a division defensive operation is shown below. This example is a plan which is in paragraph 3 of the OPORD and requires no amplification in an annex.

2. MISSION. ***

3. EXECUTION. ***

a. Concept of Operation.

(1) Maneuver

(2) Fires

b. 1st Bde

c.

d.

e. Fire Support.

(1) Field Artillery.

(a) General:

1. Priority of fires to 2d Bde.

2. Counterfire priorities: enemy mortars and field artillery affecting MBA units, then nuclear capable fire systems.

(b) Organization for Combat:

1. Div Arty.

1-40 FA (-) (155-mm, SP): DS 1st Bde, atch one btry to 2-635 FA, detached upon withdrawal of covering force

1-41 FA (155-mm, SP): DS 2d Bde

1-42 FA (-) (155-mm, SP): DS 3d Bde, atch one btry to 2-635 FA, detached upon withdrawal of covering force

1-43 FA (8-in, SP): R 1-41 FA

2-611 FA (-) (8-in, SP): Atch TF 23d Cav, detached upon withdrawal of covering force, GSR 1-42 FA

2-635 FA (+) (155-mm, SP): Atch TF 23d Cav, detached upon withdrawal of covering force; Reinf 1-41 FA

Btry E (TA) 26th FA: GS

2. Reinf FA.

61st FA Bde

2-631 FA (155-mm, SP)

2-606 FA (8-in, SP)

2-607 FA (8-in, SP)

2-661 FA (175-mm, SP)

(c) Special Instructions:

1. 2-611 FA do not exceed 50 percent CSR in Reinf 1-42 FA.

2. Deceptive fires across division

(1) This paragraph is divided into three subparagraphs—General, Organization for Combat, and Special Instructions:

(a) General: State commander's guidance on FA employment. Information concerning priority of fires, counterfire.

Preparation or counterpreparations should be included as appropriate.

(b) Organization for Combat: Give organization for combat of FA units organic or attached to the command. A mission must be assigned to each. List FA brigades attached to the command and show elements thereof. List units in numerical order. Batteries assigned a separate tactical mission under direct supervision of the command are listed in alphabetical sequence immediately following the parent battalion. List those units that have a mission of reinforcing.

(Those units that are GSR to the DIV ARTY will be indicated in paragraph 1b, situation—friendly forces.)

(c) Special Instructions: Give miscellaneous instructions that affect more than one FA unit such as: revisions of missions, instructions on planning of fires, position areas, and zones of fire.

boundaries will be cleared by FSE.

3. Firing batteries of DS FA units in MBA remain in a silent status until covering force withdraws through PL Black.

4. 2-631 FA will provide two FPF's to 1st Bde as required.

5. CSR: 232400 — 252400 May.

	HE	ICM(AP)	ICM(DP)	WP	ILLUM
155-mm	60	30	25	10	10
8-in	80	20	10		
175-mm	65				

(2) Close Air Support.

(a) General:

- 180 air sorties daily are available to 1st Corps.
- 76 air sorties distributed for planning purposes to 53d Mech Div.
- Priority of employment to elements in the CFA, MBA, and counterfire targets in that order.

(b) Distribution for Planning Purposes:

- 12 sorties daily to 1st Bde.
- 32 sorties daily to 2d Bde.
- 12 sorties daily to 3d Bde.

(c) Special Instructions:

- Four sorties per mission for planning purposes.
- Missions short of FSCL must be controlled by a FAC and/or an air support team.
- Air support radar teams Scarecrow and Packrat available through FSE.

(3) Naval Gunfire.

(a) General: Priority of fires to armor targets of more than five vehicles and counterfire targets in that order.

(b) Allocation of Naval Gunfire Support:

CA78 (Cruiser): GS 2d Bde
CA73 (Cruiser): GS 3d Bde
DD856 (Destroyer): DS TF 1-25

(c) Special Instructions: Units not having a NGF spot team can obtain NGF support through their battalion/brigade FSE.

(4) Nuclear.

(a) General: Division will plan subpackages for corps contingencies A, B, and C. Annex D (Nuclear Support Plan) provides planning guidance.

(2) This paragraph is divided into three subparagraphs—General, Distribution, and Special Instructions.

(a) General: Give general information concerning close air support available to higher headquarters and the commander's desires on use. Give allocation by higher headquarters.

(b) Distributions: Give planning distributions to subordinate units.

(c) Special Instructions: Give miscellaneous coordinating instructions and information concerning close air support when not covered by SOP.

(3) This paragraph is divided into three subparagraphs—General, Allocation of Naval Gunfire Support, and Special Instructions.

(a) General: State commander's guidance on the employment of naval gunfire.

(b) Allocation of Naval Gunfire Support: Give mission statements for all ships providing support.

(c) Special Instructions: List any instructions or restrictions that may deviate from existing SOP's.

(4) The nuclear paragraph has two parts—General and PNL.

(a) General: State commander's guidance on employment of nuclear fires, planning requirements, and constraints. Include a reference to the Nuclear Support Plan.

(b) PNL:

Unit	155-mm		8-in	
	0.1KT	0.5KT	0.5KT	5.0KT
1-40 FA	3	2		
1-41 FA	4	4		
1-42 FA	2	3		
1-43 FA			5	5
2-611 FA			5	5

(5) Chemical.

(a) General: Toxic chemicals may be planned for use within the CFA and MBA. Release for use will be transmitted per SOP (Annex E — Chemical Support Plan).

(b) PCL: As directed by 1st Corps LOI dated 20 Apr

(6) Fire Support Coordinating Instructions.

(a) Fire Planning and Control:

1. 1st Corps FSCL is BLUE RIVER, Eff 230600 May.

2. Division CFL from DY300600 to DY365600 to DY450585, Eff 232400 May.

(b) Safety:

1. Emergency cancellation of fire in clear text. Fires will be resumed upon failure to authenticate.

2. Two hour notification required by 1st Corps to change FSCL.

(b) PNL: Indicate the weapons by caliber and yield to be carried by each delivery unit. If the PNL is established by a command directive or SOP, refer to that document.

(5) This paragraph has two parts—General and PCL.

(a) General: Commander's guidance on employment of chemical fires, planning requirements and any restrictions and general considerations. Include a reference to the Chemical Support Plan.

(b) PCL: Indicate the weapons caliber and type to be carried by each delivery unit. If the PCL is established by a command directive or SOP, refer to that document.

(6) This is the last subparagraph in the FIRE SUPPORT paragraph. Its actual designation depends on the number of fire support agencies available to the command. This subparagraph contains instructions applicable to two or more fire support means, such as coordinating measures in effect and safety measures.

I-16. Fire Support Plan Dissemination

After the fire support plan is prepared, it is disseminated as a part of the force OPORD as shown in figure I-9.

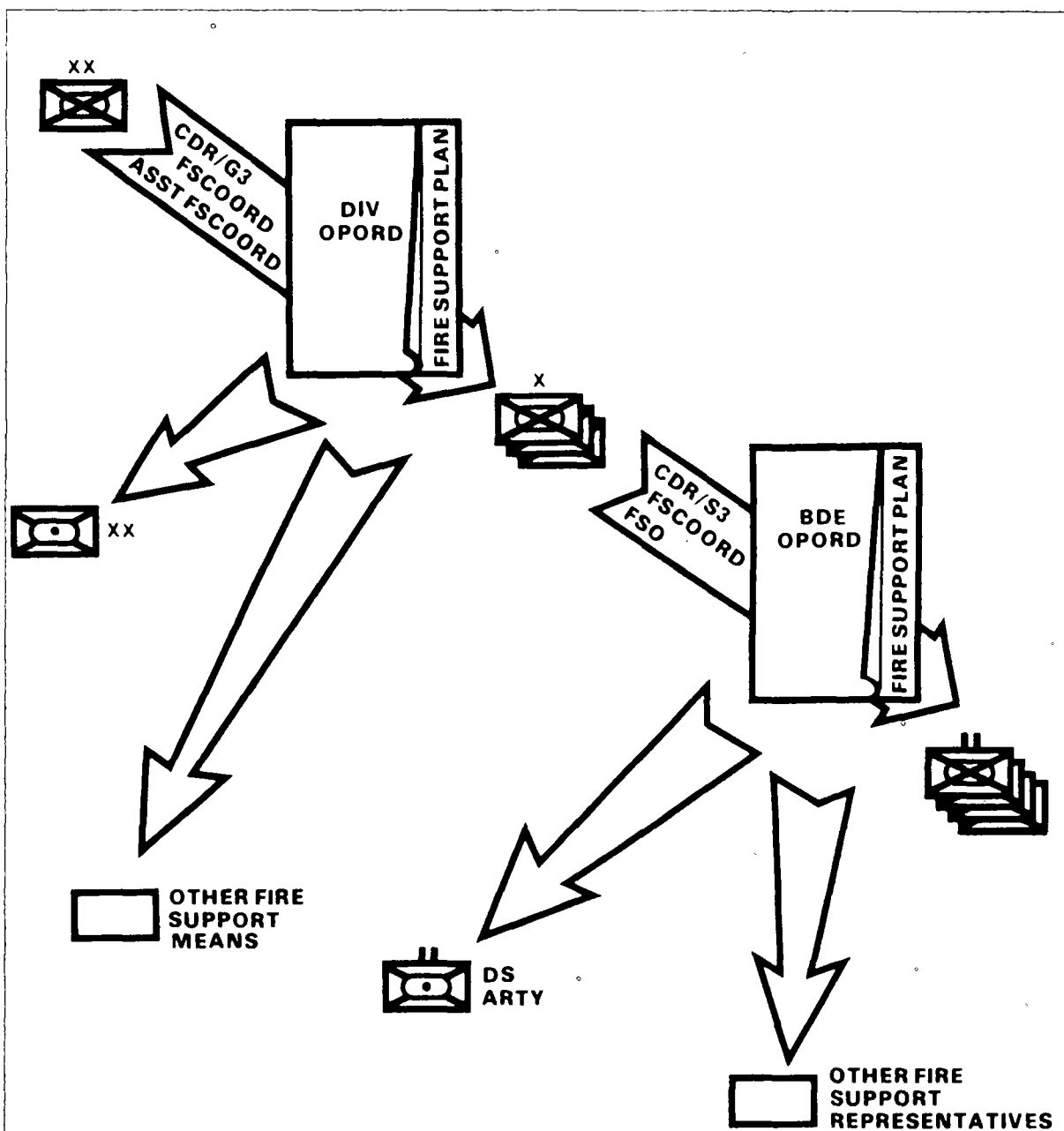


Figure I-9. Fire support plan dissemination.

I-17. Fire Support Annex

a. At the higher echelons, the fire support plan may be so extensive that it cannot reasonably be placed in the body of the OPORD. Or, at any echelon, the force operations officer (who is responsible for preparing the OPORD) may direct a limited input to paragraph 3. In either case, a *fire support annex* to the OPORD may be published. The fire support annex amplifies the information in paragraph 3.

b. The need for this more extensive document must be carefully weighed by the operations officer and FSCoord. If the fire support plan in paragraph 3 provides the necessary information, the fire support annex *should not* be published. A sample division fire support annex is at tab C of this appendix.

I-18. Field Artillery Support Plan

The FA support plan is the force artillery commander's tactical plan for employing the fires of all available supporting artillery. The FA operations officer (S3) prepares the FA support plan based on guidance, targets, and instructions included in the fire support plan of the OPORD (fig I-8) or by verbal information from the FSE. The FA support plan insures the most efficient use of available FA to support the maneuver forces and disseminates the FA commander's guidance on how to accomplish the FA portion of the fire support plan. This guidance may include designation of specific units to attack critical targets that are a threat to the accomplishment of the mission of the supported commander and the manner in which the supporting FA will engage the target. Because of the fluidity of the battle, the written FA support plan may follow the oral dissemination of those key elements needed by the units for timely execution. When completed, an FA support plan will

contain a written portion, a target list, and the fire support schedules. An example of an FA support plan is at tab D of this appendix.

a. Procedure for Preparing FA Support Plan.

The procedure for preparing an FA support plan given in (1) through (8) below applies to division artillery TOC's and DS FA battalion fire direction centers.

(1) List the targets received from the planning sources on the target list worksheet and annotate the work columns to reflect the required method of attack; e.g., preparation, counterpreparation, groups, series, and programs.

(2) Plot targets on the target overlay and designate other targets as appropriate.

(3) Resolve any duplication of targets.

(4) Determine the firing unit(s) to attack and the method of attack for each target.

(5) Prepare an FA scheduling worksheet for those fires that are to be scheduled; e.g., preparation fire, counterpreparation fire, series of targets, programs of targets, and groups of targets.

(6) Annotate the work column(s) on the target list worksheet to reflect the completion of the required action.

(7) Prepare the written portion.

(8) Extract pertinent data from the target list worksheet and scheduling worksheets and publish the target list and necessary fire support schedules for attachment to the written portion.

b. Target List Worksheet.

The worksheet is used to compile the targets for planning and is the source document for the target list that will be included in the FA support plan. The data on the target list worksheet aid in determining how each target will be attacked. The worksheet (fig I-10) consists of alphabetically designated columns and five work columns. The alphabetical column headings facilitate transmission of the data by electronic means. This is how the columns of the form are used:





■ **Ln No:** An administrative control measure for internal use. Each target listed is assigned a line number.

■ **Target Number (a):** Each target is assigned a target number from the block of numbers given to the planning source.

■ **Description (b):** Enter a concise target description that is adequate for a decision on how the target should be attacked.

■ **Location (c):** Enter grid coordinates for point, rectangular, and circular targets. For linear targets, enter the coordinates of the center point.

■ **Attitude (d):** Enter the attitude of linear and rectangular targets in grid azimuths.

■ **Size (e and f):** No dimensions are entered for a point target; one dimension (length—e) for a linear target; and two dimensions (length—e; width—f) for a rectangular target. The radius of a circular target is entered in column f—width.

■ **Source a/o Accuracy (g):** The information in this column aids in determining how to attack the target. When known, enter the source and accuracy of the target data.

■ **Remarks (h):** Enter any special consideration(s) for attack of the target. The target description may be amplified here.

■ **Work Columns:** These columns are used to indicate targets that are to be included in a particular fire support schedule. Enter one diagonal line (/) under the appropriate column to show the target is to be included in a particular schedule; when the

(53 ^d DIV OPORD 20)										TARGET LIST WORKSHEET				SHEET 1 OF 1			
LN NO	TARGET NUMBER (a)	DESCRIPTION (b)	LOCATION (c)	ATTITUDE (d)	SIZE		SOURCE a/o ACCURACY (g)	REMARKS (h)	PER	S	G	C					
					L (e)	W (f)											
1	B407	SUSP SIG CENTR	87618411			200	100 DF	GP DIY	X	X	X						
2	B408	RGMT CP	836835			150	100 II	GP DIY	X	X	X						
3	2217	SUSP 122-mm HOW BTRY	894790	1500	250	100	200		X								
4	A322	152-mm HOW BTRY	993795	1700	300	200	200	ON CALL IN PREP	X								
5	A323	SUSP OP	889802						X			X					
6	C257	122-mm HOW BTRY	906787	0700	250	100	150		X								
7	Y003	130-mm GUN BTRY	937822	1200	300	100	150		X								
8	B409	SUSP OP	948812						X			X					
9	B410	TRENCH LINE	947775	1300	300	100	100 A0	GP D2Y	X		X						
10	Y004	BN CP	818799			150	150 II		X								
11	2218	122-mm HOW BTRY	980830	0800	250	100	200		X								
12	2219	152-mm HOW BTRY	94828171	1600	300	200	100		X								
13	2412	RGMT CP	88071615			150	100	GP DIY	X	X	X						
14	A324	AT WPN SITE	930820			100		SERIES PAUL	X	X	X						
15	A325	TRENCH LINE	963814	1500	400	100	100 A0	SERIES PAUL GP D2Y	X	X	X						
16	Y005	122-mm HOW BTRY	815819	1700	250	100	150		X								
17	Y006	OP	986751						X			X					
18	Y007	OP	975812						X			X					
19	B415	SUSP 122-mm HOW BTRY	874693	1400	200	100	100		X								

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FOR USE OF THIS FORM SEE FM 6-20. THE PROPORTION AGENCY IS THE US ARMY TRAINING AND DOCTRINE COMMAND

Figure I-10. Completed sample target list worksheet.

target has been scheduled, enter an opposing diagonal line, forming an "X" to show the action is complete.

A completed sample target list worksheet is at figure I-10.

c. Target Overlay.

The target overlay is a tool to supplement the target list worksheet and it is *not* published as part of the FA support plan. As a minimum it should include the targets to fire, units to fire, supported unit's boundaries, and any fire support coordination measures in use. The overlay will aid in:

- ☐ resolving duplications,
- ☐ evaluating adequacy of planned support

in relation to the scheme of maneuver, and

- ☐ determining the most appropriate unit to attack a given target.

d. Target List.

The target list is a part of the FA support plan and contains data on targets planned to support the operation. The data are extracted from the target list worksheet and are presented in the format shown in figure I-11.

	(a)	(b)	(c)
Ln No.	Tgt No.	Description	Location
1	B407	Susp Sig Cntr	87618411
2	B408	Rgmt CP	83608350
3	Z217(a)	Susp 122-mm How Btry	894790

Remarks: (a) Attitude 1500 mils.

Figure I-11. Target list.

Each target is assigned a line number for administrative control. The remarks section is used to enter special instructions regarding individual targets. A remark entered in this section is keyed to a subscript next to the target number. The target list can be easily reproduced and disseminated.

e. Scheduling Worksheet.

The FA S3, based on commander's guidance, analyzes the information on the target worksheet and determines what schedules of fires will be needed to support the scheme of maneuver or plan of defense (e.g., counter OP program).

Any of the following schedules may be prepared depending on the tactical situation:

- ☐ Groups
- ☐ Series
- ☐ Programs
- ☐ Preparation fires
- ☐ Counterpreparation fires
- ☐ Illumination fires
- ☐ Harassing fires
- ☐ Interdiction fires
- ☐ Smoke

The scheduling worksheet is the fire support planner's tool for organizing targets into specific schedules. A separate worksheet is constructed for each schedule planned to support the operation. Some general procedures used in *most* schedules are shown in figure I-12.

- Place the target number above the line and the amount of ammunition to be fired below the line. (The amount of ammunition shown in figure I-12 is based on the sustained rate of fire for each weapon.)

- o Indicate the TOT by a dot.
- o Place the target number above the dot and the amount of ammunition to be fired below the dot. (The shell/fuze combination is HE/Quick unless otherwise indicated by a remark.)

(4) For on-call targets to be fired during a particular schedule:

Below the target number, show the number of rounds to be fired. Do not draw a line or dot between the target number and ammunition entry.

[illegible]

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Figure I-12. Sample schedule worksheet (preparation).

FOLDOUT

f. Instructions for Specific Schedules.

(1) *Preparation (fig I-12)*. A preparation is a schedule fired in three phases in relation to an H-hour. The preparation must begin and end firing with all fire units that are used in the preparation.

No gaps (i.e., two or more consecutive shift times) in scheduling should occur. Shift time is the time from when a cannon unit ceases firing on one target until the unit is able to begin firing on another target. Shift time is affected by many variables (e.g., state of training, amount of shift, type of munition to be fired, etc.). For planning and scheduling purposes, a shift time of 1 minute is established for light and medium (105-mm and 155-mm) artillery and a shift time of 2 minutes is established for heavy (8-in and 175-mm) artillery. All units should be capable of shifting in less time than the established figures.

Any gaps which do occur should be "filled" by refiring phase one targets. Units should have commenced firing on the last targets in one phase before or at the same time that they begin firing on targets in the next phase. However, this may not always be possible because some weapons may not have adequate range to fire at targets in all phases. In that case, the weapons are scheduled into the phase that is within their capability rather than being excluded altogether from the preparation.

(2) *Counterpreparation*. The counterpreparation, like the preparation in figure I-12, is also fired in phases (2) with firing beginning and ending with all units participating and no gaps permitted. Firing should have begun on the last targets of one phase before or at the same time that firing commences on the first targets of the succeeding phase.

(3) *Groups*. This schedule is normally fired on call and is not scheduled against a time sequence. Rather it is scheduled so that fires will strike the targets at the same time. The group number is shown on the top line of the scheduling worksheet (fig I-13). Below the

(GROUPS for 53d Div OPORD 20) SCHEDULING WORKSHEET											
LINE NO	ORGANIZATION AND CALIBER	FIRING UNITS									REMARKS
			(D1Y)		(D2Y)						
1	3-42FA	A	B 407		B 410						
			18(a)		36(a)						
2	(155,SP)	B	B 408		A 325						
			24(a)		36(a)						
3		C	Z 412								
			24(a)								
											(a) 50% VT

Figure I-13. Sample groups of fires.

group number, list the targets of the group opposite the firing unit assigned the target. Below each target number, show the number of rounds to be fired. No line or dot is drawn between the target number and the ammunition entry.

More than one group for a given operation

may be scheduled on the same scheduling worksheet.

(4) *Programs.* Programs are fired on call at the commander's request. Each type program is scheduled starting at 0 and extending as long as needed (fig I-14).

(Counter OP Program for 53dDiv) SCHEDULING WORKSHEET										
OPORD 20										
LINE NO	ORGANIZATION AND CALIBER	FIRING UNITS								REMARKS
			0	1	2	3	4	5	6	
1	3-42FA	A			A 323		Y 007			
					24 (a)		6 (a)			
2	(155,SP)	B			B 409		Y 007			
					24 (a)		6 (a)			
3		C			Y 006		Y 007			
					24 (a)		6 (a)			

Figure I-14. Sample counter OP program.

(5) *Series*. Normally the commander requesting a series will indicate the sequence in which he wants the targets attacked. Scheduling is then accomplished according

to this guidance. If there is no guidance, the FA S3 will schedule the fires in the order he determines will best support the scheme of maneuver. The series is normally fired on call

(SERIES PAUL FOR 53 RD DIV OPORD 20										) SCHEDULING WORKSHEET	
LINE NO	ORGANIZATION AND CALIBER	FIRING UNITS							REMARKS		
			0	1	2	3	4	5		6	
1	3-42FA	A	A 325			A 324					
			18 (a)			6 (b)					
2	(155 SP)	B	A 325			A 324					
			18 (a)			6 (b)					
3		C	A 325			A 324					
			18 (a)			6 (b)					
										(a) 50% VT	
										(b) 50% SMK	

Figure I-15. Sample series schedule.

and is scheduled starting at 0 (fig I-15).

(6) *Illumination/Smoke*. For targets with a specified duration of fire but for which the ammunition requirements are unknown; e.g., smoke and illumination targets where the expenditures are affected by wind speed and direction (fig I-16):

□ Indicate by a horizontal line the TOT and

duration of fire.

□ Place the target number above this line.

□ Below the line center a subscript keyed to a remark that shows the method of engagement; e.g., 2-gun illumination, lateral or range spread, first rounds WP and HC—succeeding rounds HC, etc.

□ When scheduling smoke back off 1 minute to allow for buildup time.

(SMOKE for 53 ^d Div OPORD 20) SCHEDULING WORKSHEET										
LINE NO	ORGANIZATION AND CALIBER	FIRING UNITS								
			0	1	2	3	4	5		REMARKS
1	3-42FA	A			A 324					(a) 1 st RND WP & HC, Succeeding RND HC
					(a)					
2	(155, SP)	B			B 409					
					(a)					

(ILLUMINATION FOR 53 ^d Div OPORD 20) SCHEDULING WORKSHEET										
LINE NO	ORGANIZATION AND CALIBER	FIRING UNITS								
			0	1	2	3	4	5		REMARKS
1	3-42FA	A			A 325					(a) 4 GUN ILLUM
					(a)					
2	(155, SP)	B			B 410					(b) 2 GUN LATERAL SPREAD
					(b)					

Buildup time is not included. This is a 5-minute schedule—not a 4-minute with 1-minute buildup.

Figure I-16. Sample illum/smoke schedule.

g. Schedule.

(1) The schedule is a part of the FA support plan and contains data extracted from the scheduling worksheet. A separate

schedule is included in the plan for each type schedule of fires planned. The schedule format is shown in figure I-17.

ANNEX B (PREPARATION SCHEDULE) TO FIELD ARTILLERY SUPPORT PLAN 1 FOR 53D MECH DIV OPORD 20

	(a)	(b)	(c)	(d)
LN NO.	UNIT	TGT	ROUNDS	TOT
1	A/1-123	Z217	18 (a)	H-5
		Z218	18 (a)	H-2
		Y005	12 (a)	H+1

Remarks: (a) ICM

Figure I-17. Sample schedule.

(2) The heading will include the OPORD/OPLAN being supported and the schedule name (Preparation Schedule, Series PAUL, etc.). The standard shell/fuze combination is HE/Q unless specified differently by a remark. The TOT column indicates the time on target of the initial rounds. Subsequent rounds are fired at the sustained rate of fire for the designated weapon.

(3) If the designated unit will not be able to fire the number of rounds shown in the time period allowed, the commander must notify the FA headquarters that issued the schedule.

(4) If a fire unit is called out of engagement of an FA support schedule, it reenters the schedule based on present time rather than the next target to be engaged (e.g., a unit firing a preparation is diverted to a target of opportunity at H-5 minutes. It takes 4 minutes to attack the target of opportunity. The unit reenters the preparation at H-1.)

h. Written Portion.

In the FA support plan, the written portion is the basic document. It follows the five-paragraph field order format and includes the information necessary to understand the plan and other special information on the employment of FA fires in support of the operation or any phase of the operation. The heading of the plan indicates the FA headquarters publishing the plan. A security classification, map reference, and time zone will be shown. The ending of the original copy will bear the signature of the FA commander of the publishing headquarters and all other copies will be authenticated by the FA S3. A sample FA support plan with a target list and schedules of fire is at tab D of this appendix.

I-19. Close Air Support Plan

a. Preparation of the CAS plan is the responsibility of the G3/S3 assistant at

corps, division, and brigade who has staff responsibility for air support (fig I-7). He is assisted by the Air Force representative who provides technical knowledge and advice on employment of CAS. (Appendix D of this manual discusses CAS employment.) Close coordination is maintained with the FSCoord to insure that the CAS plan is integrated into the fire support plan contained in the OPORD. The ground force commander approves the CAS plan and it is disseminated through CAS channels with an information copy to the FSCoord.

b. The CAS plan supports the OPORD of the force and amplifies the information in paragraph 3 (or the fire support annex) to issue specific instructions on *how* CAS will accomplish its portion of the fire support plan for the operation. The force will be distributed

CAS sorties for planning by the next higher echelon. If no sorties are distributed or the distribution is inadequate, the force headquarters must seek additional sorties from the next higher echelon. The fire support plan in the force OPORD or the annex will then reflect the total sorties distributed for planning and how these sorties are further distributed to subordinate elements for their *planning*. These sorties form the basis for development of the CAS plan. When the plan is completed, it is forwarded through Army channels to the next higher headquarters for approval and consolidation. The corps G3 air consolidates all CAS plan requirements for sorties from subordinate headquarters and presents them to the Air Force tactical air control center (TACC) at the corps TOC as a statement of Army requirements for support (fig I-18).

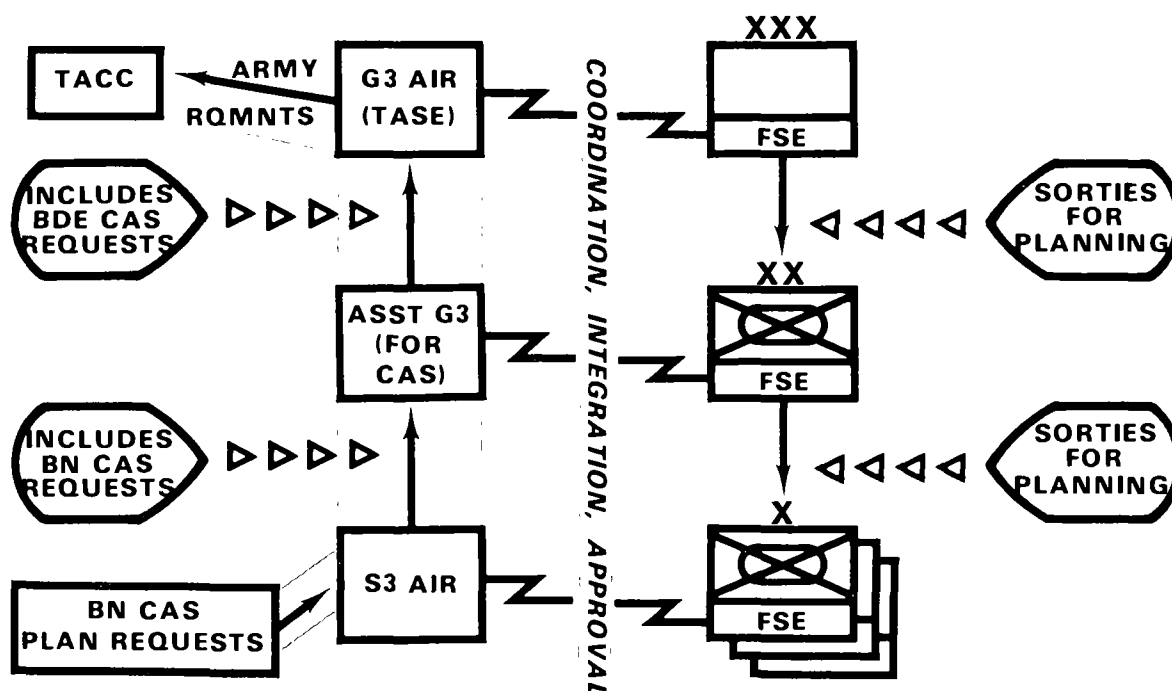


Figure I-18. CAS planning.

c. The CAS plan may consist of a written portion with a target list and target overlay.

An example of a CAS plan is at tab E of this appendix.

I-20. Naval Gunfire Support Plan

a. When NGF is available to the force, it will be incorporated into the fire support plan by the FSCoord and will be reflected in paragraph 3 of the OPORD. Members of the air naval gunfire liaison company (ANGLICO) at division and brigade levels will advise the FSCoord on the employment considerations of NGF. Appendix E of this manual discusses employment of NGF and the ANGLICO.

b. The NGF representative is responsible for preparation of the NGF support plan to provide specific instructions to NGF elements on how their portion of the fire support plan is to be accomplished (figs I-7 and I-8). This plan is developed in close coordination with the FSCoord, approved by the force commander, and disseminated through NGF channels with an information copy to the FSCoord. An example of the NGF support plan is at tab F of this appendix.

I-21. Chemical Support Plan

Chemical fire support planning documents normally are prepared no lower than division

level. The corps commander usually will not authorize the decentralization of chemical weapons control below division level. The chemical support plan is composed of a written portion (five-paragraph field order format), chemical fire support table/target list, and a target overlay. A sample chemical support plan is at tab H of this appendix.

a. Corps Chemical Support Plan (*fig I-19*).

The corps chemical officer is responsible for preparation of the chemical support plan (figs I-7 and I-8). Target selection and analysis is determined in coordination with the FSCoord. The plan is developed in line with the commander's guidance concerning the employment of toxic chemical weapons. The number of weapons and delivery systems available to the corps normally appears in the chemical portion of paragraph 3 of the corps OPORD.

Units selected to fire the planned targets normally are those FA units retained under corps control. Additionally, the corps retains CAS sorties for air-delivered toxic chemical weapons. The corps FSE may task the weapons systems of the divisions when necessary to fire a corps-developed target. This will be more prevalent when corps retains control of *all* chemical weapons.

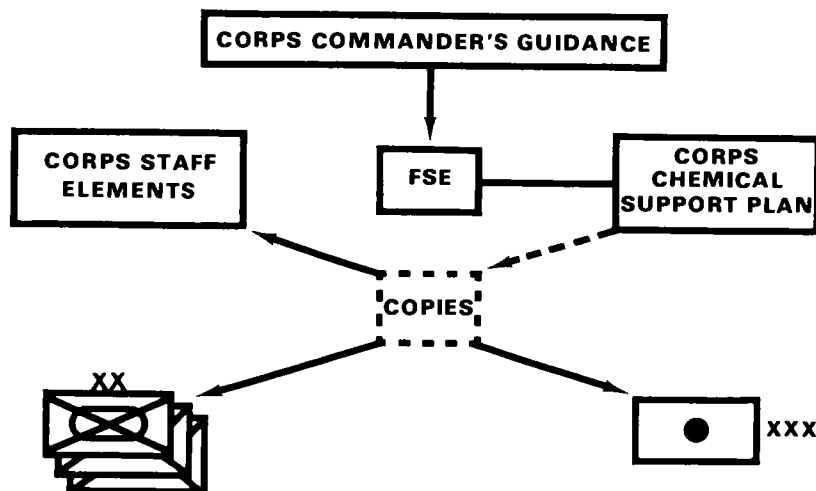


Figure I-19. Corps chemical support plan.

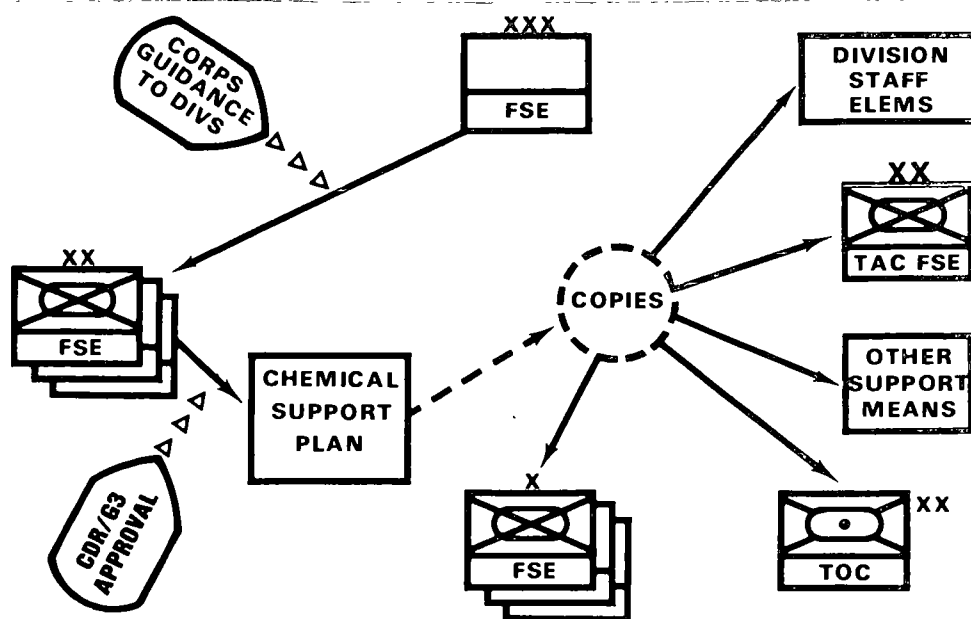


Figure I-20. Division chemical support plan.

b. Division Chemical Support Plan (fig I-20).

The division chemical officer is responsible for the preparation of the division chemical support plan. The plan is formulated based on the weapons available to the division from corps and on employment guidance received from the division commander.

Chemical targets for planning are

developed internally at the division MAIN FSE using all-source intelligence means (fig I-21). Targets are also sent to the division from the corps FSE for attack within their respective zones. The brigade FSE's request planned chemical targets from the division MAIN FSE. These brigade targets are approved by the brigade commander prior to being requested from the division MAIN FSE.

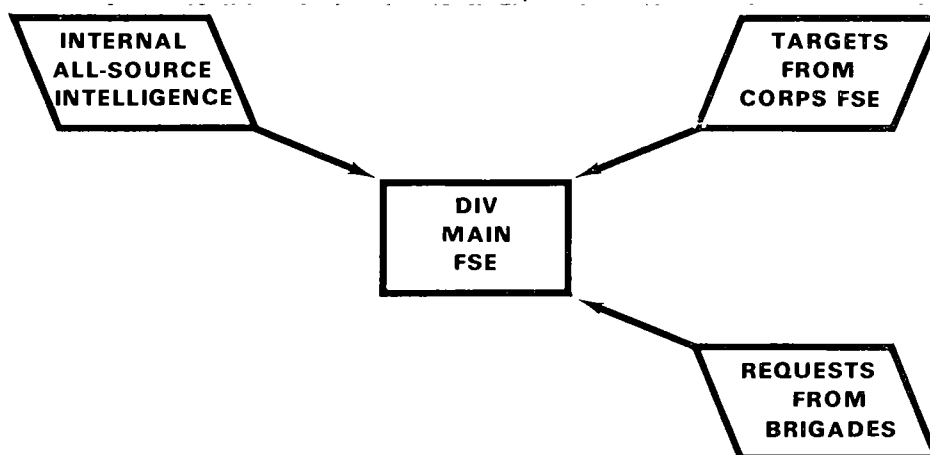


Figure I-21. Toxic chemical target planning sources.

I-22. Nuclear Fire Planning

The corps nuclear weapons package must contain the number and mix of nuclear weapons required to support any one of several anticipated contingencies covered by a single corps operations plan. Packages are planned prior to hostilities and are then refined to suit the actual tactical situation before employment during hostilities. The corps and division FSE's plan the corps nuclear weapons packages.

a. Prehostility Planning.

(1) *Divisions Plan Subpackages.* A division subpackage is the fire plan for nuclear weapons employment within the division area in support of a single corps contingency. The division MAIN FSE will plan, in accordance with the corps and division commander's nuclear planning guidance, a subpackage for each corps contingency for which the division is

required to plan. The weapons requirements and aimpoints for the subpackages are determined using *target-oriented or preclusion-oriented analysis*. Preclusion-oriented analysis requires input from several sources in the division staff.

(a) Preclusion overlay. The G5, in coordination with the G2, provides the FSCoord with a preclusion overlay (fig I-22). The preclusion overlay identifies the areas where excessive nuclear weapons effects must be precluded to comply with the commander's collateral damage preclusion guidance.

□ Areas with a population equal to or greater than the level specified in the collateral damage preclusion criteria are outlined with solid lines. Collateral damage *must be* precluded in those areas.

□ Communities with populations less than the level specified in the collateral damage preclusion criteria are outlined with dotted lines. Collateral damage *should be* precluded in those areas if tactically feasible.

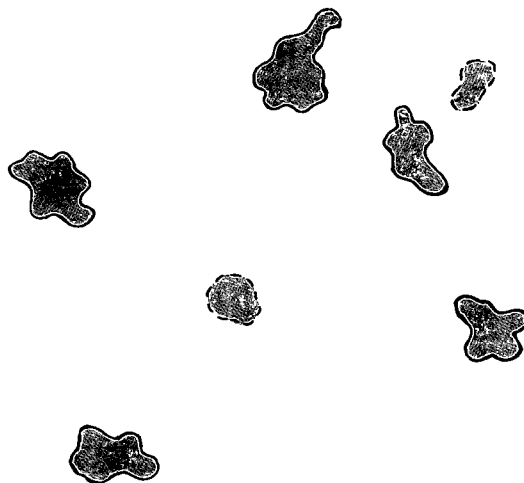
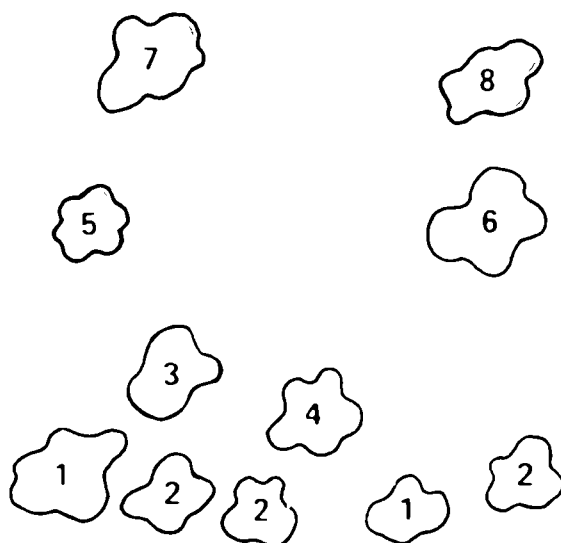


Figure I-22. Preclusion overlay.

(b) Nuclear planning threat overlay. The G2, in coordination with the G3, provides the FSCoord with a nuclear planning threat overlay (fig I-23). The nuclear planning threat overlay portrays where the enemy maneuver and fire support units are assumed to be at the time nuclear weapons are to be employed for a

particular contingency. This overlay is based on an analysis of the division's planned operations, the enemy tactical doctrine, and the terrain. The nuclear planning threat overlay identifies those areas where the enemy will probably concentrate his forces and provide worthwhile targets.



Legend

1. Symbol size indicates amount of terrain normally occupied.
2. Type units are:
 1. Tank company
 2. Motorized rifle company
 3. Tank battalion CP
 4. Motorized rifle battalion CP
 5. Tank regiment CP
 6. 122-mm battery
 7. Tank division CP
 8. MRL battery

Figure I-23. Nuclear planning threat overlay.

(c) Aimpoint selection. Nuclear weapons aimpoints are selected using the following preclusion-oriented analysis to provide the maximum coverage of probable enemy locations without violating the collateral damage preclusion criteria. This example illustrates method B on p. 6-16. Method A may also be used. Weapon templates depicting the weapon's collateral damage distance (CDD) and radius of damage (RD) around an aimpoint (fig I-24) are used to select weapons and aimpoints on the nuclear planning map (a composite of the preclusion overlay and the nuclear planning threat overlay).

□ Collateral damage distance. The CDD is obtained from the nuclear target analyst in the FSE. In accordance with the commander's guidance, a specified degree of assurance (50%, 90%, 99%, etc.) of not exceeding the collateral damage preclusion criteria will be associated with the CDD to account for the delivery system's dispersion. The size of the CDD depends upon the delivery system, yield and—for most tactical delivery systems—range to the aiming point. Since delivery unit locations will probably not be known during prehostility planning, the CDD should be determined using an assumed range (e.g., 2/3 system range) to the aiming point. The planning based on this CDD will remain valid as long as the assumed range is not exceeded during employment. Preclusion of collateral damage is assured by positioning the weapon template on the nuclear planning map so that the CDD circle remains outside the solid lines representing the limits of the preclusion areas. Additionally, the CDD circle should be positioned outside the areas outlined with dotted lines if tactically feasible.

□ Radius of damage. The expected RD is obtained from the nuclear target analyst. The RD circle shows the area coverage for the target category and level of casualties or damage specified by the commander (e.g., immediate transient incapacitation of personnel in tanks). The size of the expected

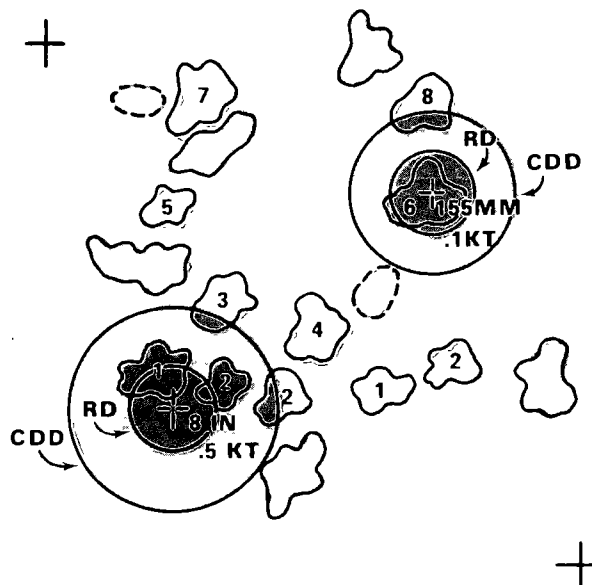


Figure I-24. Aimpoint selection.

RD depends upon the delivery system, yield, and—for most tactical delivery systems—range to the aiming point. The RD should also be determined using an assumed range to the aiming point (e.g., 2/3 system range) and will remain valid if this assumed range is not exceeded during employment. The weapon template should be positioned on the nuclear planning map so that maximum coverage of the assumed enemy locations is obtained with the RD circle while observing the collateral damage preclusion criteria. Overlapping of RD circles should be avoided to insure maximum area coverage with available weapons.

(d) Assessment. An assessment of coverage with the planned weapons and aimpoints is conducted to insure that the total number and mix of weapons in the subpackage is sufficient to dramatically change the tactical situation. The percentage of the area assumed to be occupied by enemy units that is covered by the radii of damage circles is estimated. If the commander's coverage defeat criterion has not been met,

more weapons should be planned.

(e) Target-oriented analysis. Known or fixed targets, such as bridges or airfields, may be targeted using the target-oriented method of analysis. Known target information is used to select the best weapon system and aimpoint to produce the desired coverage on an individual target. The nuclear target analyst in the FSE performs this analysis, using procedures described in FM 101-31-1.

(f) General planning guidance. The following general planning guidance will assist the FSCoord in the selection of weapons and aimpoints.

□ Subkiloton weapons are generally ineffective when used individually against poorly located targets. They should be used near the FEBA where direct target location is more possible, or properly scheduled and fired in groups of two or more at greater ranges.

□ DS units should provide the fires nearest the FEBA. This is because of the low yield weapons they fire, and the ability of FIST's and FSO's to identify close-in critical targets that can result in aimpoint refinement during hostilities.

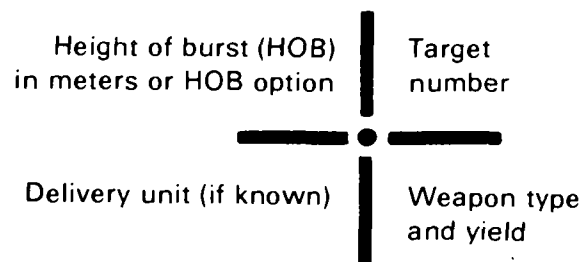
□ Divisional heavy battalions can also place small yield fires close to the FEBA for the same reasons discussed for the DS battalions.

□ Heavy battalions provided by corps, and TACAIR using larger yields, should be employed deeper into the area on relatively fixed aimpoints.

(g) Preparation of subpackage. Using the FSE, the FSCoord prepares a subpackage for each corps contingency that the division has been directed to support. Each subpackage will include:

□ Weapons and yields required.

□ An aimpoint list or overlay. Each target designation may include:



□ A schedule of fires. The nuclear schedule is determined by the nuclear target analyst using procedures contained in FM 101-31-2 (SRD). Preinitiation (yield degradation) and the interference by one detonation with another weapon in flight must be considered in determining this schedule.

□ The timespan. The length of the schedule and the delivery units' capabilities will determine the time required to employ the subpackage.

(2) Corps Consolidates Packages.

(a) Weapons requirement for each contingency. Division subpackages are used by the corps FSE to consolidate the divisions' planning into a corps nuclear fire plan and weapons requirement for each contingency (fig I-25). Using the same techniques as in planning subpackages, the corps FSE adds weapons and aimpoints for each corps contingency to

□ attack enemy forces at a greater depth on the battlefield;

□ fill in areas covered by corps target acquisition and intelligence gathering resources; and

□ attack targets directed by higher headquarters.

NUCLEAR REQUIREMENTS FOR CONTINGENCY 1

Delivery System	Yield (KT)**	1st Div	2d Div	Corps	Total
155-mm	0.1	10	8	2	20
	0.5	*	*	*	*
8-in	0.5	*	*	*	*
	2.0	*	*	*	*
	5.0	*	*		*
Lance	5.0			*	*
	10.0			*	*
ADM	1.0	*	*		*
TACAIR	2.0			*	*
	10.0			*	*
TOTAL		*	*	*	*

*Actual numbers of weapons and totals are situational.

**Hypothetical Yields

Figure I-25. Contingency weapons requirements.

(b) Determination of corps packages. The corps FSE resolves the nuclear weapons requirements for each contingency into the fewest number of distinctly different packages. All contingencies that occur at the same general depth in the corps area would be included in a single corps package that will support any one contingency in that package. Overlapping package areas allow the corps commander to maintain some flexibility in deciding when and where he will initiate the

use of nuclear weapons. The weapons requirements for each contingency are resolved into a package weapons requirement (fig I-26). This procedure insures that sufficient weapons of each delivery system and yield are available to support any one of the contingencies included in the package. The corps FSE determines a package area and timespan that are suitable for all contingencies included in each package.

Delivery System	Yield (KT)**	Contingency 1	Contingency 2	Package ELM	Contingency 3	Package OAK
155-mm	0.1	20	18	20	19	20
	0.5	*	*	*	*	*
8-in	0.5	*	*	*	*	*
	2.0	*	*	*	*	*
	5.0	*	*	*	*	*
Lance	5.0	*	*	*	*	*
	10.0	*	*	*	*	*
ADM	1.0	*	*	*	*	*
TACAIR	2.0	*	*	*	*	*
	10.0	*	*	*	*	*
TOTAL		*	*	*	*	*

*Actual numbers of weapons and totals are situational.

**Hypothetical yields

Figure I-26. Package weapons requirements.

(c) Package review and approval. The corps packages are forwarded to higher headquarters for approval. The following information would be included as a minimum:

1st Corps Nuclear Weapons Package OAK

Purpose: To halt enemy penetration north of a line between hills 1200 and 900 and permit reconstitution of a conventional defense.

Number: * nuclear weapons not to exceed * — 155-mm/0.1 KT; * — 155-mm/0.5 KT; * — 8-in/0.5 KT; * — 8-in/2.0 KT; * — 8-in/5.0 KT; * — Lance/5.0 KT; * — Lance/10.0 KT; * — ADM/1.0 KT; * — TACAIR/2.0 KT; * — TACAIR/10.0 KT.

Time: Time frame—to be requested when needed.
Timespan—not to exceed * minutes.

Area: From MB 9668 to MB 0838 to MA 3757 to MA 9886 to MB 9668.

Constraints: Preclude 5-percent casualties requiring hospitalization in urban areas over * population and 5-percent moderate damage to buildings in those communities (99 percent assurance level).

*Actual numbers (weapons, minutes, population) are situational.

Note. Yields shown above are hypothetical.

(3) *Nuclear Support Plan.* Corps and division nuclear support plans are prepared for approved packages. Figure I-27 shows the dissemination of these nuclear support plans.

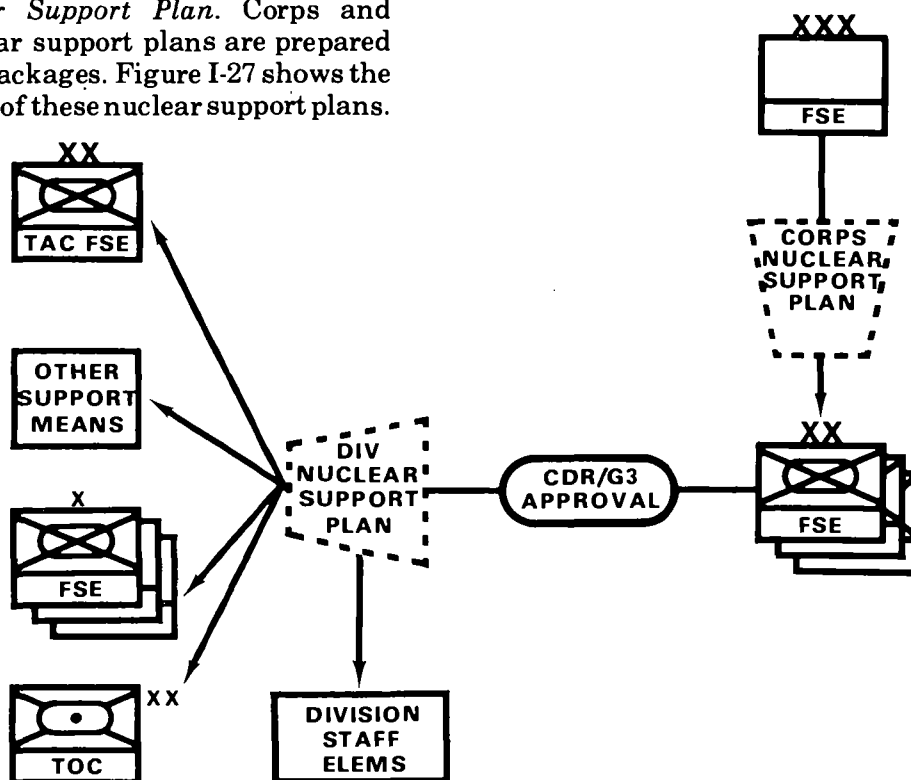


Figure I-27. Dissemination of nuclear support plans.

(a) Corps nuclear support plan. Nuclear fire planning information may be contained in paragraph 3 of the corps OPORD (e.g., PNL, weapon systems available, etc.). An approved corps package is documented in a nuclear support plan composed of a written portion (five-paragraph field order format) with appropriate inclosures (overlays, package contingency instructions to division, etc.). The corps nuclear support plan reflects the final requirements for each division to execute its part of the corps package. This plan is disseminated to the divisions.

(b) Division nuclear support plan. The divisions now finalize their nuclear support plans providing instructions to subordinate elements. The MAIN FSE of the division prepares a written portion in the five-paragraph format with the appropriate inclosures (overlays, subpackage contingencies, etc.). The plan will be disseminated to subordinate division elements after approval of the division commander. An example of a division nuclear support plan is shown at tab G of this appendix.

b. Planning During Hostilities.

Upon identification of a particular package, contingency, and additional commander's guidance for employment, the prehostility nuclear fire planning must be adapted to the actual tactical situation. The corps package will be refined within the limits established by higher authorities and planned or approved package parameters—number of weapons, area, and timespan. This package refinement provides the tactical commander with nuclear fire planning, which is flexible and responsive without compromising the directives of the National Command Authority (NCA) and higher echelons in the theater.

(1) *Package Refinement.* Within the limits established by higher authorities, the employment constraints and package parameters, the package will be refined to provide the best tactical effect. Changes that

could be made include

- adjusting individual aimpoints within the area approved;
- adjusting yields within constraints;
- exchanging weapons or delivery systems/units between aimpoints, abiding by collateral damage constraints;
- reducing number of nuclear weapons in pulse if tactical situation permits;
- adjusting schedule of fires within the approved timespan; and
- selecting time for timespan to begin for best tactical effect.

(2) *Final Aimpoint and Weapon Selection.* Aimpoint and weapon selection are accomplished during package refinement using the same techniques as in the prehostility planning. Target-oriented targeting (acquired, relatively fixed targets) techniques may be used more often for aimpoint/weapon refinement at deeper ranges. The types of targets at the deeper ranges would typically include chokepoints, headquarters, supply installations, etc. The weapons templates used during prehostility planning remain valid during refinement as long as the assumed ranges upon which the collateral damage distances and radii of damage were based are not exceeded. If these assumed ranges are exceeded, the CDD's and RD's should be adjusted to insure that the collateral damage preclusion criteria and threat defeat criteria have been met. It may be necessary to modify the nuclear planning map during hostilities. Identified enemy targets may replace assumed enemy locations. Additional collateral damage preclusion areas may be added such as refugee concentrations not identified during prehostility planning.

(3) *Troop Safety.* To insure that friendly troops are subjected to no more than the risk level specified by the commander (e.g., negligible risk to unwarned, exposed personnel) minimum safe distances (MSD) from friendly nuclear detonations must be considered during package refinement. MSD contours for each delivery system and yield

are drawn from the line of contact (fig I-28). The MSD is obtained from the nuclear target analyst and is based on the maximum range to aimpoint for each type delivery system.

The final aimpoint for each weapon must be located on or farther from friendly troops than the respective MSD contour.

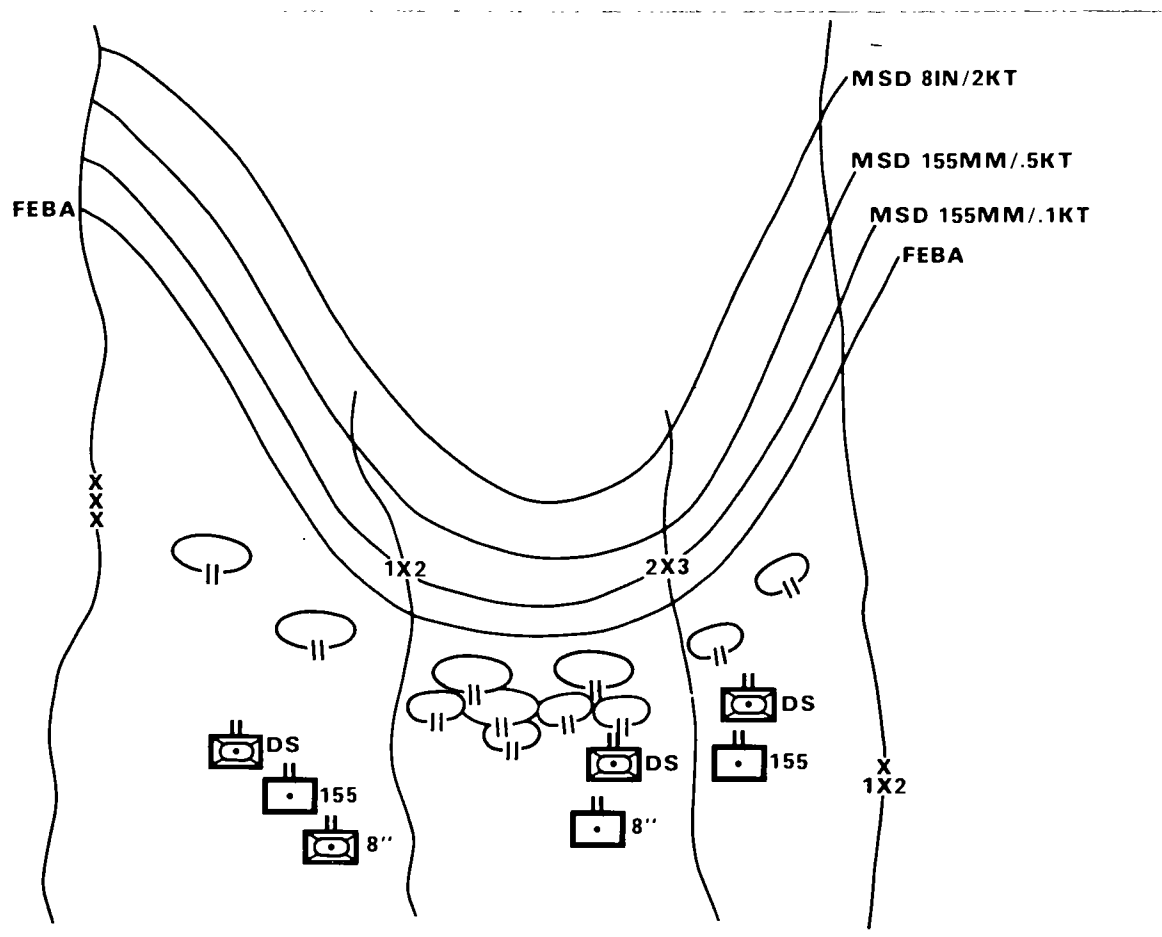


Figure I-28. MSD contours.

Section IV. INFORMAL FIRE SUPPORT PLANNING

Informal fire support planning is designed to be far more flexible and responsive than formal planning. It is tied to the dynamics of the battlefield and to the immediate fire support needs of company and battalion commanders. Informal planning does not rely on written plans but depends for success

on close personal coordination, an efficient communications system, and standardization of actions through SOP's, battle drills, and fragmentary orders. Practically speaking, it goes from *lower to higher* and may range from the assignment of a target number by a FIST chief to an FSO at battalion consolidating the target lists from several companies. Informal planning is most common at the company and battalion task force levels. While the time for this planning is normally very brief, the fire

support planner considers and uses the same principles used for formal planning at the higher echelons (para I-11). Informal fire support planning emphasizes the use of fires from mortars and FA that can respond most readily to the battle. In the more deliberate situations, CAS, NGF, and other indirect fires may also be planned.

I-23. Company Level Informal Planning

At the company/team, the FIST headquarters provides fire support planning for the commander. The FIST chief is the FSCoord for the company and in this role supervises the activities of the FO's deployed with the platoons. Although a planner, the FIST chief retains the habitual task of being an FO for the company.

The FIST chief may perform either deliberate or hasty fire planning to support a company/team operation. The decision to employ one or the other technique normally is dictated by the time available for planning. Both techniques are based upon the premise that targets must be placed into the fire planning channels soon enough for them to be processed at a fire direction center.

a. Deliberate Fire Planning.

Deliberate fire planning techniques are applied when the situation is relatively well developed and time permits detailed step-by-step procedures.

□ The FIST develops targets and assigns target numbers based on the company/team commander's guidance, the terrain, and the tactical situation. These targets are coordinated with the other fire support personnel at company/team level (weapons platoon leader, platoon FO's, and NGF spotter). The sources of these targets may include information obtained from the platoon FO's, direct observations, combat patrols, maneuver unit ground surveillance radars, unattended ground sensors, the maneuver commander, the maneuver

battalion FSO, or the DS FA battalion S2. Normally, the FIST chief will initially record these targets on his map, using target symbols. He briefs the company/team commander on his plan for fire support of the company/team operations and obtains the commander's approval.

□ The FIST chief transfers the approved targets to a target list, an informal document that contains information required by the receiving FDC to quickly identify, process, and compute technical firing data for the indicated targets.

□ The mortar target list is forwarded to the company mortar FDC and, for those targets that the mortars cannot handle or that require a more suitable means, a list is sent to the battalion FSO by the most secure means available within existing time constraints. A member of the FIST may personally handcarry the target list to the maneuver battalion FSO. If wire communication has been established, the FIST chief should endeavor to establish a conference call with the FSO, DS battalion FDC, and the firing battery that has been supporting him, and transmit his target list to all simultaneously. If time precludes either of the above methods, the FIST chief must encode his target list and transmit it to the FSO (fig I-29).

□ The battery that normally fires for the FIST monitors the communications between the FIST and FSO, acknowledges the call, computes data and records the target as on-call. When the battery acknowledges the call between the FIST and FSO, the FIST knows that its target has been placed in an on-call status in the battery FDC.

□ The battalion FSO consolidates the targets from all company FIST's, resolves conflicts, adds targets as required, and assigns targets to FA, heavy mortars, or other means.

□ The battery also monitors the FSO's communication to the DS battalion FDC to check for additions or deletions and acknowledges the transmission.

□ The DS battalion FDC calls the battery

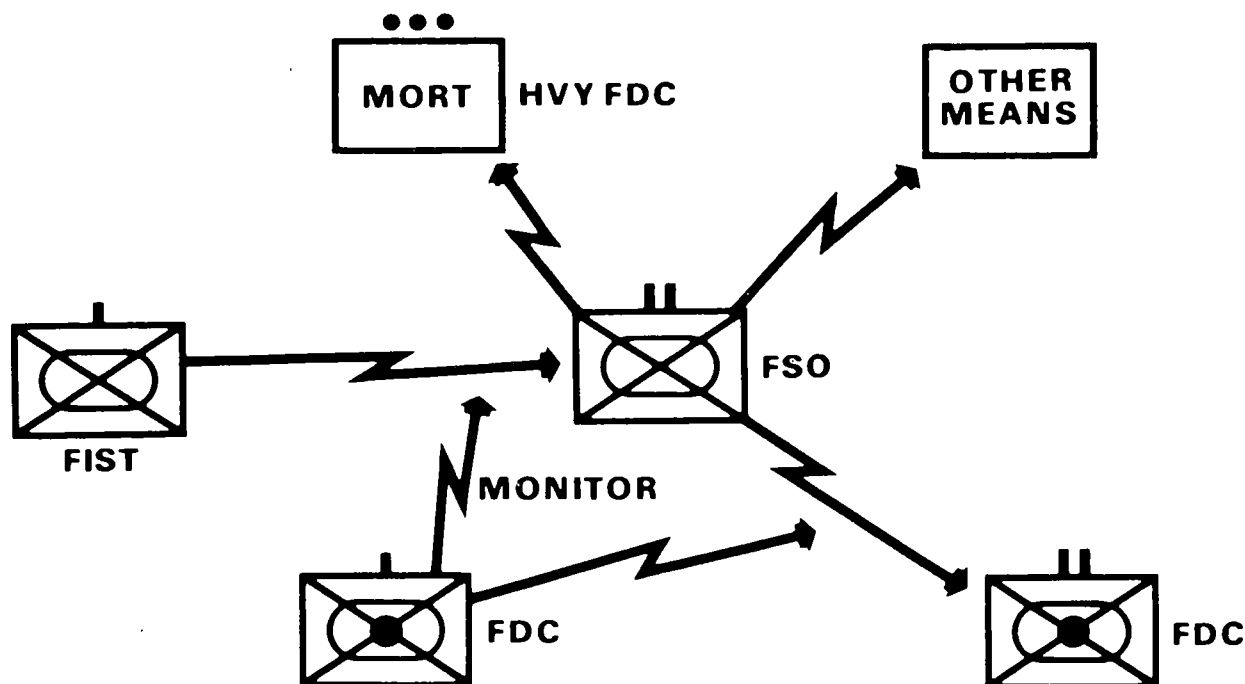


Figure I-29. Informal planning channel.

concerning a target only if there is a change. They will send the target list to additional batteries as necessary.

b. Hasty Fire Planning.

Hasty fire planning techniques are applied when time is limited. They are used primarily when company/team in the movement to contact is supported by a dedicated battery. As with the deliberate procedures already addressed, the FIST chief develops targets and assigns target numbers. Selection of targets is normally restricted to terrain that falls within the category of "likely enemy locations." The target list is transmitted directly to the dedicated battery FDC with the maneuver battalion FSO and DS FA battalion FDC monitoring. In situations not requiring a dedicated battery, the target lists derived from hasty planning are sent to the battalion FSO in the same way as in deliberate planning.

c. Encoding of Target Lists.

Encoding of target lists for either deliberate or hasty planning can be accomplished by a variety of means, which are usually specified by unit SOP.

These include authorized operations codes, encode devices such as the KAL-61, or by use of the gridded thrust line.

I-24. Battalion Level Informal Planning

At the battalion FSE, the FSO has access to FA, heavy mortars, CAS, and perhaps other means for which planning is conducted. Target lists from the FIST's are consolidated and purged of duplication and new targets are added as required to insure adequate support. Fire support assets available to the FSO are assigned targets,

and requirements beyond the battalion capabilities are forwarded to the brigade FSE. The list of planned targets is provided to each fire support agency tasked and to the brigade FSE. The FSO continually reviews the planned targets in relation to the scheme of maneuver or plan of defense.

Section V. FIRE SUPPORT COORDINATION

I-25. Fire Support Coordination Principles

Fire planning is of little practical value if the FSCOORD is not able to effect the coordination necessary to insure the successful execution of a plan. Coordination is *keyed* on established principles. These principles are applied by FSCOORD's at all levels of a force.

a. Insure a Continuing Flow of Targeting Information.

The FSCOORD must insure that *all* targeting information available at his echelon continues to flow into the fire support system.

b. Consider Use of All Available Fire Support Means.

Each FSCOORD considers the fire support available at his and higher levels and the command guidance for its use. In applying this principle, the FSCOORD must be mindful of the echelon at which he is working. The support available at company and battalion TF may differ considerably from the fire support means available for coordination at division. As combat operations unfold, it is often necessary to change selected weapons systems and munitions, and in considering alternate systems, the FSCOORD should seek the advice of other fire support representatives at his echelon. Sometimes it will be necessary to use the *most available system* even though it is *not the most effective system*. This puts

fires on the target *now* while the request continues for a more effective means to use *later*. For some situations, the FSCOORD may request multiple systems for use against a single target area, as when suppressive fires are directed against enemy ADA sites to permit friendly aircraft to attack a target unhindered. The FSCOORD must be concerned with using available fire support consistent with the commander's desires for fire support systems *now* and in the *future*. He must insure that his actions do not run contrary to the commander's guidance and that resources will be available for future operations.

c. Use Lowest Echelon Capable of Furnishing Effective Support.

Fire support is delivered by the lowest echelon having effective means available. If a company can do the job with organic mortars, the FIST does not request FA support. The FSCOORD is constantly confronted with the question of how to get the most from the fire support means at his own level before seeking additional fires from the next echelon. He must decide what is needed and, if his own assets will not meet that need, request additional fire support from the appropriate echelon.

d. Use the Most Effective Means.

Requests for fire support are normally sent to the agency with the most effective means. The FSCOORD considers the nature and importance of his target, the likelihood of it remaining in the current location, the availability of attack means, and the results desired. To get the desired results, it is frequently necessary to use a less desirable means to temporarily fix the target, until a more effective means can attack. An example of this is a situation in which CAS is the most desired means but will require about 20 minutes to arrive over the target, whereas FA and mortars can fire *now*.

e. Furnish Type Support Requested.

Usually the requestor of fire support is in the best position to know *what* is needed. However, the FSCOORD is in the best

position to weigh the request against the commander's guidance on priority targets and the current and future uses of fire support. A high priority target for a FIST may be less important when weighed by the FSO at the battalion TF. If a request for fire support is disapproved, the FSCOORD stops the request and notifies all concerned; or when possible and warranted, he substitutes a new means and alerts the agencies to provide (receive) the support.

f. Avoid Unnecessary Duplication.

A key task for the FSCOORD is to insure that duplications are resolved and that only those means needed to get the desired effects are used on a single target. This principle is of great importance on today's battlefield where US forces will be outgunned and outmanned. Judicious use of scarce fire support assets is a *must*; duplication cannot be tolerated. The use of multiple means on a single target is *not* duplication if all the means used are required to achieve the desired results.

g. Consider Airspace Coordination.

The *trajectories* of indirect fire weapons are hazardous to close support aircraft and both are dangerous to other friendly aircraft in the area. The FSCOORD provides inputs concerning fire support uses of airspace to those agencies and personnel engaged in airspace management. At division and corps, air defense personnel collocate with FSE's to enhance this exchange of information. (See FM 100-44 and TC 101-5.) At lower levels this coordination would include FAC's, NGF spotters, AO's, and other users of airspace.

h. Provide Rapid Coordination.

There can be no hesitation in the execution of fire support. The FSCOORD must *know* the characteristics of the various fire support means; he must have *immediate* information on the availability of the means; he must insure that coordination channels are established and are functioning smoothly; and, he must stay abreast of the battle as it develops in order to resolutely attack planned targets and targets of opportunity. He will be

confronted with volumes of information and scores of decision points. When TACFIRE is fielded, the processing of information will be automated to facilitate decisionmaking and to further speed the coordination of fires. Appendix K of this manual discusses TACFIRE.

i. Provide for the Safeguarding and Survivability of Friendly Forces.

While *planning* is done regardless of boundaries and friendly locations, the execution or *coordination* of that fire support must always be cognizant of established boundaries and friendly locations. To provide the above rapid coordination the FSCOORD must continually use and update all types of coordinating measures.

I-26. Coordination Considerations

As the FSCOORD coordinates the fires of the available fire support means, he should consider, as a minimum the following points as they apply to each means.

a. Field Artillery.

□ The battalion FSO coordinates all requests by FIST's for FA. He will intercede only when additional coordination is required.

□ Battalion FSO's are responsible for establishing communications with the battalion FSO's on the right and left for the purpose of coordinating fires across or near boundaries. One technique is to switch to the CF frequency of the adjacent FSO.

□ Give the job to the lowest echelon capable of furnishing effective support.

□ Surprise massed fires provide optimum effects. A battalion 1 provides much better results than a battery 3 and reduces exposure to enemy target acquisition means.

□ The FSO is responsible for recommending the location of coordinating measures.

b. Close Air Support.

□ Insure that all immediate requests for CAS are justified. An immediate request may cause a preplanned mission of another unit to

be diverted.

- Aircrews believe that the voice from the ground belongs to the man in charge. If it does not, the pilot must know it.

- Do not put the FAC on a busy FM net when he is working fighters. If the first part of a message, "Don't bring the napalm closer" is cut out, a friendly fire incident is born.

- Be prepared to use aircraft when they arrive on station—they usually cannot stay long.

- Keep helicopters out of the way of fast-moving aircraft. Give them an area, altitude, and direction of orbit.

- Be sure the FAC knows how many sorties he has coming, so he can plan orbit areas.

- Be prepared to inform the FAC where other fire support systems will be shooting.

- Decide in advance who will brief the FAC, and have an alternate means of conducting the strike if the FAC becomes a casualty.

- Coordinate strikes close to boundaries with adjacent units.

- An airborne FAC is a must on a smoky battlefield.

c. Naval Gunfire.

- Normally an air/naval gunfire liaison company will be attached to the division and will be responsible for coordinating and directing naval gunfire and naval close air support.

- The period of time that a ship can stay on station depends on several variables: weather, enemy action, replenishment requirements, etc.

- Communications with the ship should be effected as soon as possible to insure early coordination. This is normally ANGLICO's responsibility.

- Because of the flat trajectory, inherent in the naval gun, and the resulting large range probable error, extreme care should be used when the gun-target (GT) line is perpendicular to friendly frontlines.

- The ship's constantly changing position (unless anchored) and/or the movement of

friendly forces may affect the relative attitude of the GT line to friendly frontlines, and may cause cancellation of a fire mission.

- Ships carry varying amounts and types of ammunition but there will be restrictions on what they can shoot in support of maneuver based on their defensive needs.

- Maneuver company elements and the ship must know and understand the emergency signal for lifting fires.

d. Mortars.

- Close and continuous liaison by the FSO with the battalion mortar platoon leader is required to insure that the 4.2-inch mortar fires are coordinated and integrated with other available fire support.

- The FSO and maneuver S3 should know when the 81-mm mortars are firing.

- Mortars displace by echelon to provide continuous support. However, don't expect first round fire for effect accuracy since 81-mm mortars are seldom surveyed.

- High winds have a greater effect on mortar rounds than on low trajectory weapons. Consider this if troop safety is a question.

e. Attack Helicopters.

- Know the frequencies and call signs of the supporting aircraft. Attack helicopters have FM, UHF, and VHF radio capabilities.

- Pilots must know call signs and frequencies and who to check with. Keep them listening (but not talking) on the appropriate maneuver command nets.

- Coordinate with the maneuver S3 to determine who will give the pilot instructions, identify the target, and control the fires.

- Pilots should be briefed in advance on the tactical situation, the air defense threat, FA and mortar GT lines, troop locations, emergency signals for lifting fires, and the method used to mark friendly positions.

- Use the eight points of the compass (N, NE, E, etc.) when talking to pilots. Also, remember that they deal in degrees, not mils.

- Make sure the man on the ground expects attack helicopter pilots to contact him. If he is

fire support from his battalion FSO's. Like the battalion FSO's, he generates fire support missions based on his own planning against targets of brigade interest. The brigade FSE has the same means available as does the battalion FSE; however, the brigade has access to greater allocations through its coordination and planning with the division TAC and MAIN FSE's over the division artillery CF net. When requests for support are received or generated, the FSO analyzes the target to determine how much and what type fire to apply.

b. The brigade FSE monitors all subordinate requests for immediate CAS, using the radios of the ALO. Silence is concurrence. If the FSO wants to cancel, amend, or substitute means, he directs the ALO to intervene in the request. Requests for preplanned CAS strikes are coordinated with the brigade S3 air before forwarding the requests through the TAC FSE to the MAIN FSE of the division.

c. The NGLO at the brigade FSE provides the FSO a direct link to ships supporting the brigade. Requests for support by additional ships are submitted by the FSO to the division TAC FSE (NGFO).

d. Should the FSO generate a target to be assigned to FA, he communicates directly with the DS FA battalion FDC.

e. Like the battalion FSO, the FSO at brigade must coordinate with other fire support facilities when the target is outside the brigade sector or zone or when coordinating measures restrict attack of the target.

b. When the brigade FSE's request preplanned CAS strikes, the requests will be consolidated at the TAC FSE and forwarded to MAIN FSE. The AFSCOORD, with the fighter liaison officer (FLO), will determine the best way to meet these competing demands while observing the commander's guidance. However, if a target is determined to be particularly dangerous to the division operation as a whole, the AFSCOORD may request more CAS from the corps FSE. The AFSCOORD will monitor all immediate CAS requests with the FLO's HF radio and follow the same procedures as the brigade FSO.

c. If a request for additional NGF support is received from any brigade, the AFSCOORD will direct the division NGFO to coordinate the mission with the general support ship. He will then insure that the requesting agency is linked up properly with the respective ship. The ANGLICO, the personnel framework to effect NGF, goes only as high as division level; therefore, there is no higher NGF support channel.

d. Coordination with adjacent and higher fire support coordinating facilities must be effected to enable firing of targets outside the division's boundaries.

e. If the AFSCOORD generates targets to be fired, he may use any of the means available within the FSE or division artillery. After the division artillery TOC has used all its organic, attached, and reinforcing

units, requests for added FA support are sent to the corps FSE through the MAIN FSE.

1-32. Corps Level

a. The corps FSE is primarily concerned with the allocation of assets and becomes involved in responding to fire requests by tasking the assets retained at corps.

b. Corps will probably have all cannon FA brigades attached to divisions, or reinforcing the division artilleries. It will normally retain Lance missile battalions and brigades available to respond to requirements. FA assets (brigades) can be reallocated as the battle develops to support the changing needs of the divisions.

1-33. Counterfire Channels

The division artillery TOC is the facility responsible for the coordination of the division counterfire program. The division artillery TOC may initiate counterfire in response to a request for immediate counterfire or against lucrative, fleeting counterfire targets of opportunity. It may also initiate planned counterfire programs to suppress or destroy the enemy's artillery at the critical time and place.

a. Immediate Counterfire.

Any unit receiving incoming artillery, mortar, or rocket fires can request immediate counterfire from the FA. Requests should include:

<i>Identification</i>	72B56 THIS IS X2F7
<i>Warning Order</i>	IMMEDIATE COUNTERFIRE
<i>Type of Fire</i>	HEAVY MORTARS
<i>Direction of Source of Fire</i>	FROM NORTHWEST
<i>Severity of Fire</i>	RECEIVED 10-20 ROUNDS
<i>Area Shelled (grid)</i>	AB 147638

b. Channels (fig I-37).

Maneuver and FA units request counterfire through normal fire support/fire direction channels. Other combat support and combat service support units supporting maneuver units can request counterfire through the FSE's of the maneuver units. Other support units can request counterfire through their command channels. The request for counterfire is sent to the division artillery TOC and should be encoded using authorized brevity codes or—if possible—be sent by

secure voice equipment to prevent the enemy from learning the effectiveness of his fires. The division artillery TOC will immediately respond to the counterfire request with FA fires based on the guidance from the division commander concerning

- priority of fires,
- ammunition constraints, and
- survivability of our FA.

Simultaneously, the division artillery TOC may also request jamming and USAF close air support through the division TAC FSE.

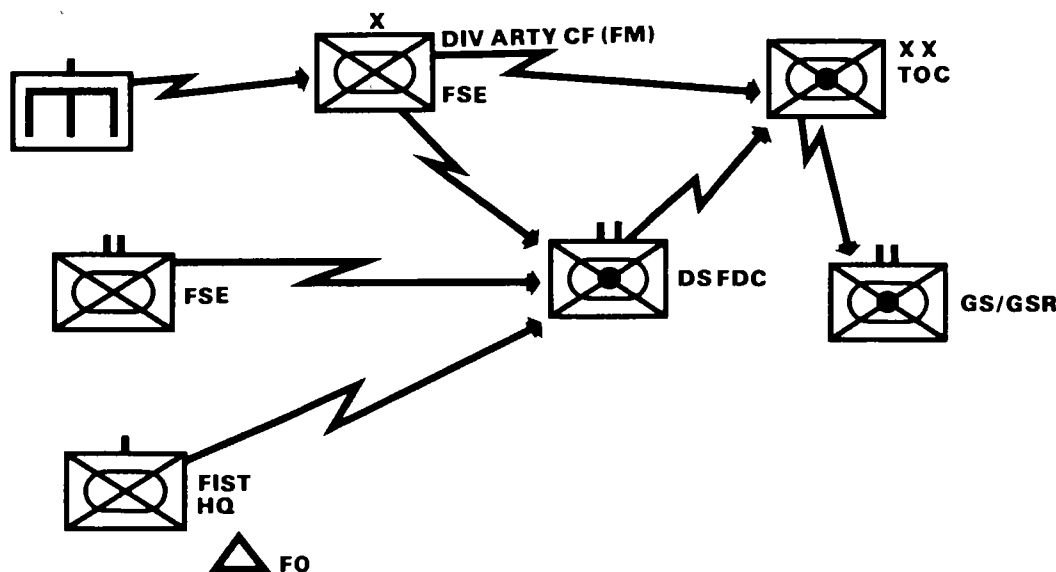


Figure I-37. Counterfire request channels.

I-34. Fire Support Coordination Measures

Fire support coordination measures serve as the guidelines that insure responsive and safe fire. Some coordination measures are designed primarily for maneuver operations; some to guide fire support execution; and some to meet the needs of *all* elements of the force. Coordination measures designate areas of the battlefield in which certain actions may or may not occur during a specified time. The measures are therefore

classified as permissive or restrictive. See appendix H of this manual for a complete definition of each measure and how each is established and disseminated.

a. Boundaries.

Boundaries are established by the force commander for a subordinate unit to define the zone of action for that unit (fig I-38). Boundaries assist in the control of fires as well as maneuver. Here are some examples of the use of boundaries for the control of fires:

- *TF 1-12 Armor* can attack target 100 with no further coordination needed. *REASON:*

The target is in the zone of action of TF 1-12. Before attacking target 101, the FSO with TF 1-12 must coordinate with the FSO with TF 1-13. **REASON:** Safety. The target is in the zone of an adjacent unit and should not be fired on until coordination is effected (there is no CFL in effect).

□ *TF 1-13 Armor* can attack target 101 with no added coordination needed because that target is in its zone of action. However, it cannot strike target 100 or 102 without first

coordinating with the elements in whose zones they are located.

□ *TF 1-14 Armor* first coordinates with *brigade* before attacking target 102. **REASON:** The target is beyond the zone of action designated by the battalion's boundaries. The same situation would exist if TF 1-12 or TF 1-13 wanted to attack target 103 or XB 101; coordination must be effected with brigade for 103 and with division for XB101 (XB 101 is outside the brigade zone).

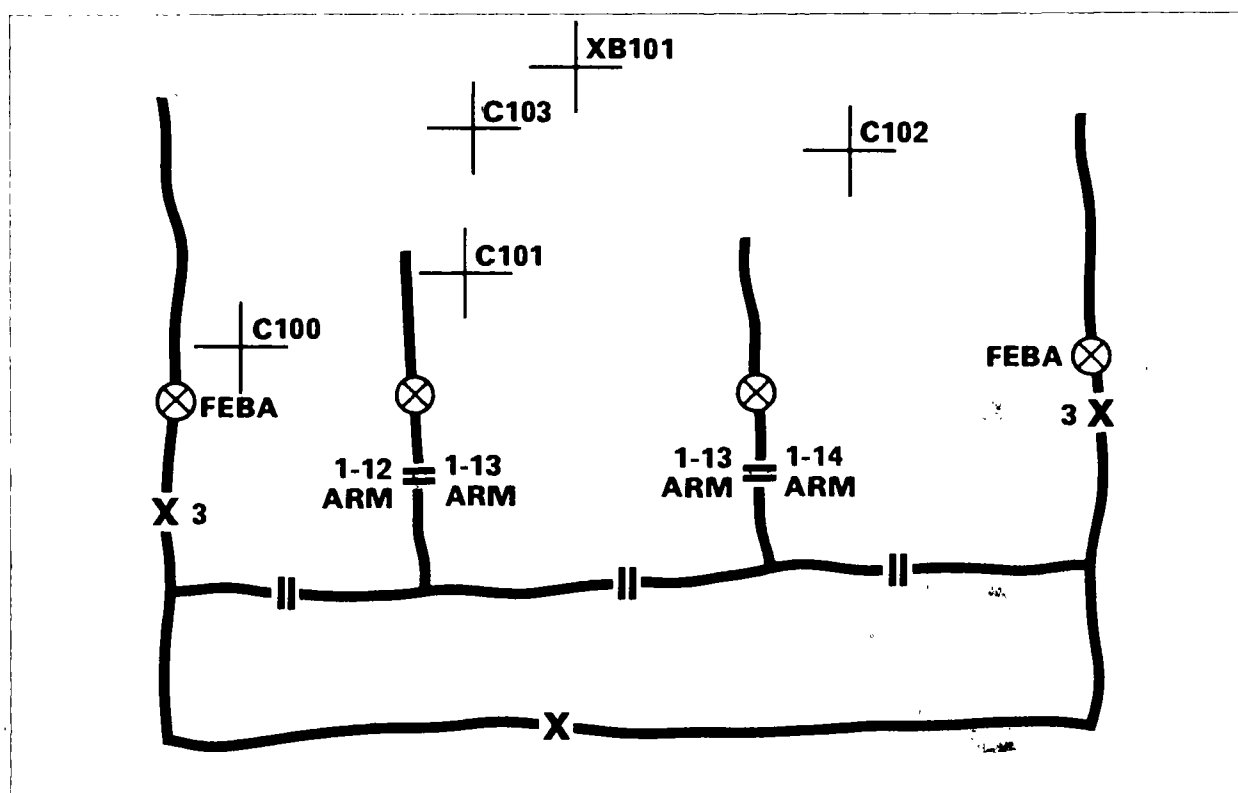


Figure I-38. Use of boundaries.

b. Permissive Measures.

(1) A *coordinated fire line* (CFL) is a line *beyond* which FA, NGF, and mortars can fire at any time *within the zone of the establishing headquarters* with no further need for coordination (fig I-39). It is designed to expedite fires across boundaries and to enhance rapid fire support reactions to

targets in those areas. Fires short of the CFL *do* require coordination. The CFL is usually established by brigades and divisions; occasionally, battalion TF's may require CFL's. The line is positioned commensurate with troop safety and the need for added and responsive fire support in zone. The CFL is portrayed as a dashed black line and this is how it is used:

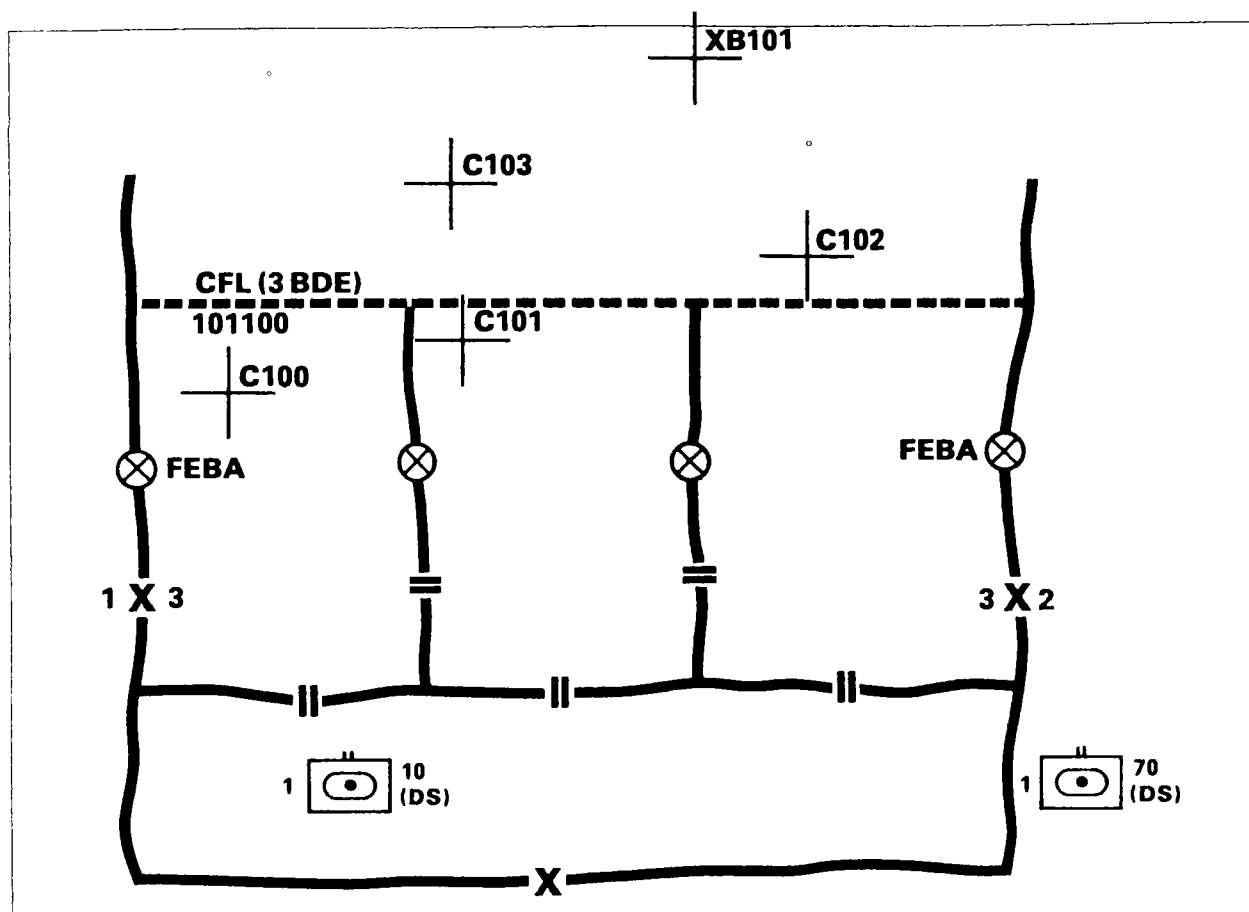


Figure I-39. Use of coordinated fire line.

□ The 1-10 FA (and any other surface-to-surface fire support means) can attack targets 102 and 103 without further coordination of the fires. *REASON:* Both are in the zone of action of the supported unit and are *beyond* the CFL established by the 3d Brigade. Targets 100 and 101 were planned by 3d Brigade but cannot be attacked by surface-to-surface *indirect* fire unless coordination is effected with the FSO at the FSE of the respective battalion.

□ The 1-70 FA can also attack targets 102 and 103 without further coordination. *REASON:* The target is beyond the CFL and is within the zone of the brigade that established the CFL. It should not attack XB 101 unless that target is coordinated with the

division FSE because the target is outside the zone of the 3d Brigade.

□ CAS cannot attack any of these targets without coordination because the CFL pertains only to the control of surface-to-surface fires.

(2) The *fire support coordination line* (FSCL) (fig I-40) is a line beyond which all targets may be attacked by *any* weapon system without danger to friendly troops or additional coordination with the establishing headquarters. This expedites the attack of targets. The FSCL is established by the force commander (normally corps). It applies to all types of fire support ammunition and its effects. It is located on terrain identifiable from the air and is portrayed by a solid black line.

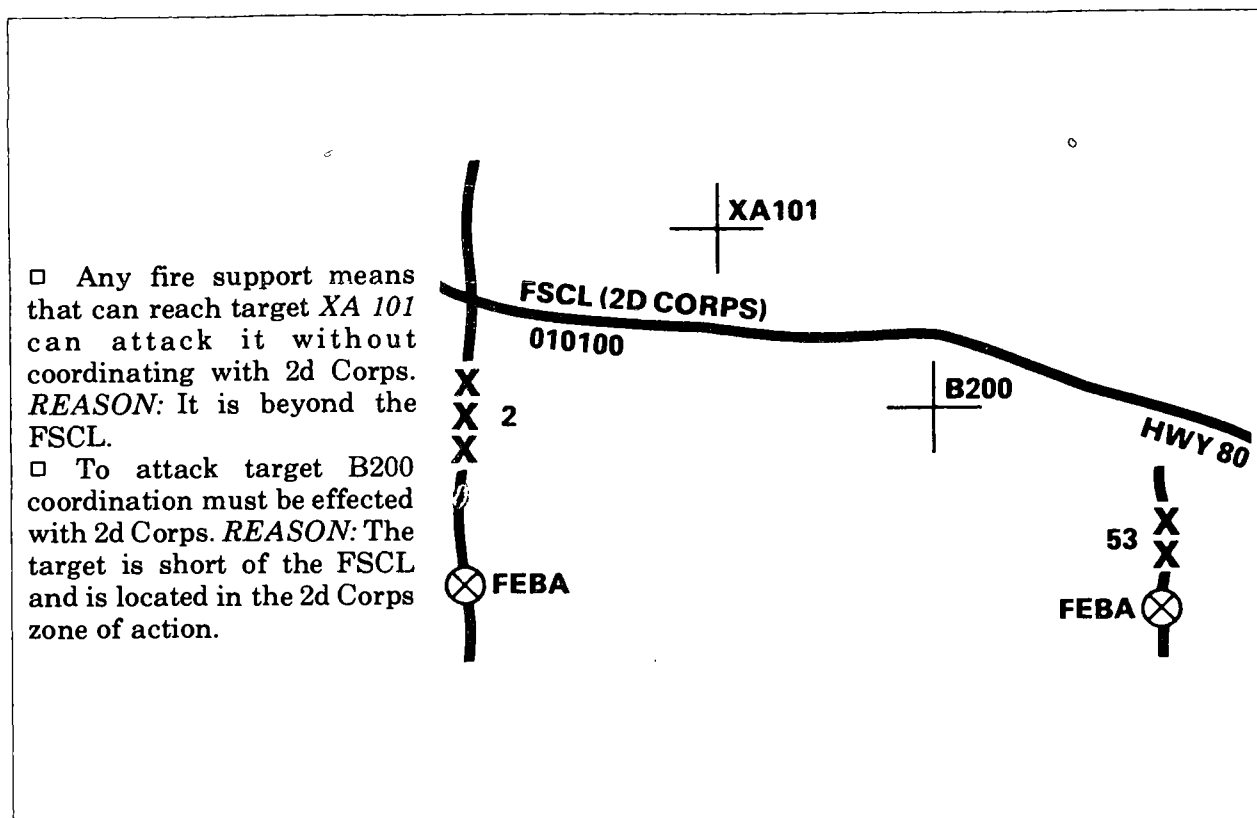


Figure I-40. Fire support coordination line.

(3) A *free fire area (FFA)* (fig I-41) is an area into which any fire support means may deliver fires without coordination. This speeds reaction to targets in the FFA. It can be used for an area where neutralization by fire support is preferred to the use of maneuver forces or where friendly aircraft can jettison ammunition. The FFA is normally designated by a division or corps commander following coordination with the civilian authority in the area. The FFA applies to conventional fire support. It is delineated by prominent terrain features if possible. If not, grids may be used. The FFA is outlined in black with the abbreviation "FFA," the establishing headquarters, and the DTG shown.

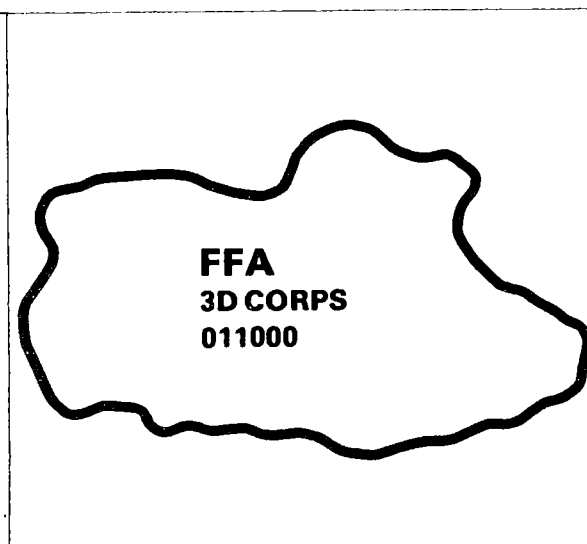


Figure I-41. Free fire area.

c. Restrictive Measures.

(1) A *restrictive fire line (RFL)* (fig I-42) is a line established between two converging friendly forces and across which fires and their effects cannot extend without prior coordination with the affected force. The RFL is established by the commander common to both forces and applies to all types of ammunition and fires. It is

positioned on identifiable terrain to facilitate recognition. When practical and appropriate, it is located closest to the stationary force to give more freedom to the moving force. On maps and overlays, the RFL is shown as a solid red line. In this example, the 10th Armored Brigade cannot fire beyond Highway 70 after 101000 without coordination with airborne brigade.

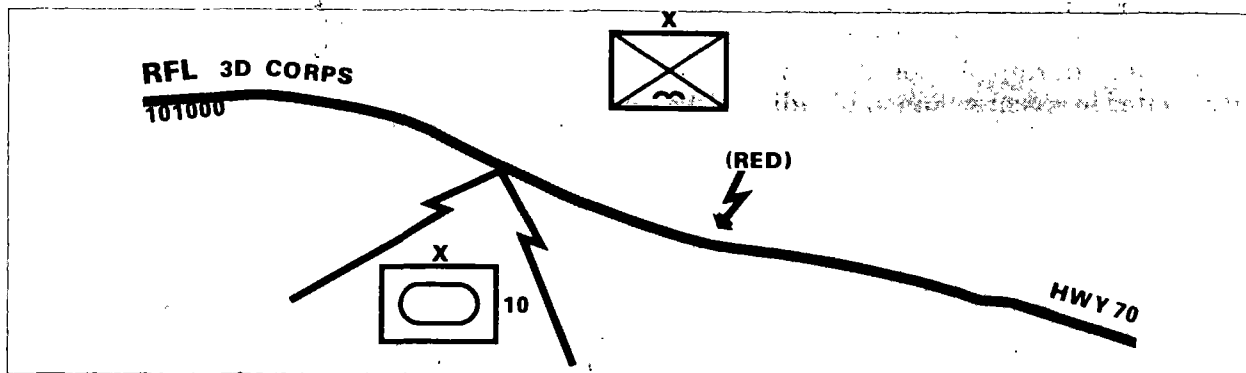


Figure I-42. Restrictive fire line.

(2) The *restrictive fire area (RFA)* (fig I-43) establishes constraints on fire support. Fires and/or their effects in excess of these constraints must be cleared with the establishing headquarters (battalion or higher). The RFA applies to conventional ammunition outside the constraints imposed. It is desirable that the RFA be located on identifiable terrain; however it can be stated as a radius from a center point or by grid designation. It is displayed within a solid red line with "RFA," the establishing headquarters, the DTG, and the reference that explains the restrictions. Use of an

RFA places control (regulation) of fires in the specified area with the establishing headquarters.

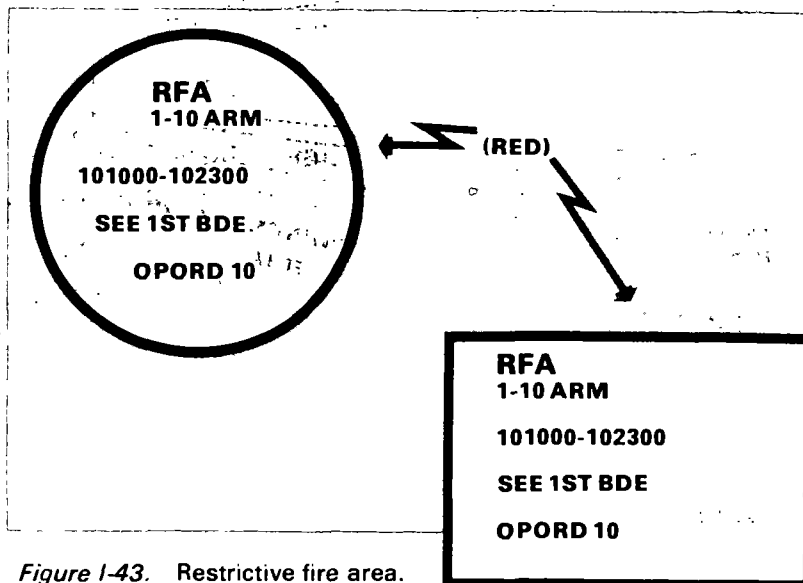


Figure I-43. Restrictive fire area.

TAB A to Appendix I: Example-Division OPORD

Note. This example depicts an OPORD in which the fire support plan in paragraph 3 is complete and *does not* require amplification in a fire support annex.

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52d Mech Div
Zebro (CX600065), MONROVIA
280001 August 19__
AB 101

OPORD 21

Reference: Map Series JWS 123 MONROVIA, sheet 1 (LODE-VEIN) edition 69-DMG,
1:50,000

Time Zone Used: ZULU

Task Organization:

1st Bde

TF 1-5
TF 1-77
TF 1-78
1-14 Cav
1-40 (155, SP) FA (DS)

Div Arty

1-43 (8", SP) FA
2-606 (8", SP) FA
2-607 (8", SP) FA
2-631 (155, SP) FA
2-661 (175, SP) FA
HHB, 61st FA Bde
Btry E (TA) 26th FA

2d Bde

TF 1-3
TF 1-4
1-23 Cav
2-14 Cav
1-41 (155, SP) FA (DS)

Div Trp

TF 1-81
TF 1-82
1-441 ADA (C/V)
* * *

3d Bde

TF 1-2
TF 1-79
TF 1-80
1-42 (155, SP) FA (DS)

DISCOM

* * *

(Classification)

(Classification)

(OPORD 21-52d Mech Div)

1. SITUATIONa. Enemy Forces. Annex A (Intelligence).b. Friendly Forces.

(1) 3d Corps defends in zone with three divisions on line: 40th Armd Div in the north; 52d Mech Div in the center; 53d Mech Div in the south.

(2) Divisions establish their own covering force.

(3) 7th TAF supports 3d Corps with 150 CAS sorties daily during the period 30 Aug to 6 Sep 19___. Priority to 52d Mech Div.

(4) FA Support.

101 FA Bde (Lance): GS 3d Corps

(5) NGF Support. Fire Support Unit (TU 36.10) supports 52d Mech Div.

c. Attachments and Detachments.

(1) 1 Aug task organization.

(2) 61st FA Bde atchd eff 290100 Aug.

(3) 1-14 and 2-14 Cav atchd eff 291200 Aug.

2. MISSION

Div establish covering force along the international border and defend in sector from DX 100320 to EX 490050 NLT 311200 Aug.

3. EXECUTIONa. Concept of Operation. Annex B (Operation Overlay).

(1) Maneuver. Div deploys covering force with bdes controlling covering force in sector. Div occupies MBA with three bdes abreast:

(Classification)

(Classification)

(OPORD 21-52d Mech Div)

1st Bde in the north, 2d Bde in the center, 3d Bde in the south. Div defends MBA in sector stopping enemy forward of bde rear boundary. Div Res (TF 1-81, TF 1-82) be prepared for commitment in area of 2d Bde and 3d Bde in priority.

(2) Fires. Priority of FA, CAS, and NGF initially to 2d Bde.

Brigades plan a 10-minute conventional counterpreparation for the MBA (para 3e, Fire Spt).

b. 1st Bde: omitted

c. 2d Bde:

(1) Establish covering force in sector.

(2) Defend in sector.

(3) Deny free access to COLUMBO.

d. 3d Bde: omitted

e. Fire Support:

(1) FA.

(a) General.

1. Priority of fires initially to 2d Bde.

2. Counterfire priorities: in order, enemy mortars and FA affecting CFA, then MBA by current SOP.

(b) Organization for Combat.

1-40 (155, SP) FA: DS 1st Bde

1-41 (155, SP) FA: DS 2d Bde

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(Classification)

(OPORD 21-52d Mech Div)

1-42 (155, SP) FA: DS 3d Bde
 1-43 (8", SP) FA: Reinf 1-41 FA
 2-606 (8", SP) FA: GSR 1-40 FA
 2-607 (8", SP) FA: GSR 1-42 FA
 2-631 (155, SP) FA: GSR 1-41 FA
 2-661 (175, SP) FA: GS
 HHB, 61st FA Bde: DIVARTY alternate
 Btry E (TA) 26th FA: GS

(c) Special Instructions.

1. 2-606 FA do not exceed 50% CSR to reinf 1-40 FA.
2. Priority of positions to 1-43 FA and 2-631 in order.
3. 1-41 FA plans fires of 2-631 FA for counterpreparation only.
4. During covering force operation, reinforced units have first priority on fires of GSR FA battalions.

(2) CAS.

(a) General.

1. Corps has 150 sorties daily, 30 Aug-6 Sep ____.
2. Eighty sorties distributed to 52d Mech Div for planning purposes.
3. Priority of fires initially to 2d Bde.

(Classification)

(Classification)

(OPORD 21-52d Mech Div)

(b) Distribution for Planning Purposes.

1. 1st Bde: 12 sorties daily.
2. 2d Bde: 28 sorties daily.
3. 3d Bde: 12 sorties daily.

(c) Special Instructions.

1. Unexpended ordnance will be jettisoned into division FFA's (See Annex B-OPN overlay). Coord with div TAC FSE.

2. Plan four sorties per mission.

(3) NGF.

(a) General.

1. TU 36.10 with two ships supports 52d Mech Div.
2. Priority of fires initially to 2d Bde.

(b) Allocation of NGF Support.

CA 78 (cruiser): GS 52d Mech Div
DD 856 (Destroyer): DS 2d Bde

(c) Special Instructions.

1. NGFO and NGLO's report to div MAIN FSE NLT 280915

Aug 19__.

2. Report ammo status daily at 0800 and 1600.

(4) Nuclear.

(a) General. Apportionment of subpackages, constraints, and aimpoint lists are shown in Annex C (Nuclear Support Plan).

(Classification)

(Classification)

(OPORD 21-52d Mech Div)

(b) PNL.

	<u>155-mm</u>		<u>8-in</u>	
	<u>0.1 KT</u>	<u>0.5 KT</u>	<u>0.5 KT</u>	<u>5.0 KT</u>
1-40 FA	8	8		
1-41 FA	9	11		
1-42 FA	8	6		
1-43 FA			8	8
2-606 FA			7	8
2-607 FA			6	4
2-631 FA		10		

(5) Chemical.

(a) General. Appendix D (Chemical Support Plan) provides guidance, allocation, instructions, and target lists.

(b) PCL.

	<u>155-mm</u>		<u>8-in</u>	
	<u>GB</u>	<u>VX</u>	<u>GB</u>	<u>VX</u>
1-40 FA	83	41		
1-41 FA	84	43		
1-42 FA	83	41		
1-43 FA			40	14
2-606 FA			30	11
2-607 FA			30	8
2-631 FA	100	100		

(Classification)

(Classification)

(OPORD 21-52d Mech Div)

(6) Fire Support Coordinating Instructions.

..(a) Bde FSEs plan 10-min conventional counterpreparation for the MBA. Distribute schedules to participants NLT 310600 Aug.

(b) 3d Corps FSCL is JOAN RIVER, eff 301800 Aug.

(c) .On order, Div CFL from DX 306609 to EX 660265.

f. Air Defense Artillery:

g. Engineer:

h. Div Trp:

i. Discom:

j. Res: TF 1-81 and TF 1-82. Be prepared for commitment in area of 2d Bde and 3d Bde, in priority.

k. Coordinating Instructions:

(1) Bdes be prepared to release unengaged units.

(2) Bdes be prepared to receive attachment of units.

4. SERVICE SUPPORT (omitted)

5. COMMAND AND SIGNAL (omitted)

Acknowledge MONTGOMERY
MG

OFFICIAL:

/s/Stinson
STINSON

ANNEXES: A-Intelligence (omitted)
B-Operation Overlay (omitted)
C-Nuclear Support Plan (TBP)

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(Classification)

(OPORD 21-52d Mech Div)

D-Chemical Support Plan (TBP)
E-Aviation (omitted)
F-Engineer (omitted)
G-Service Support (omitted)
H-Communications-Electronics (omitted)

Distribution: B

(Classification)

TAB B to Appendix I: Example-Division OPORD

Note. This example depicts an OPORD for which the force operations officer and FSCoord have agreed to publish a fire support annex. This OPORD is the same as the previous example (tab A) except the information in paragraph 3 for fire support is more limited and is amplified by the fire support annex.

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 52d Mech Div
 Zebro (CX600065), MONROVIA
 280001 August 19__
 AB 101

OPORD 21

Reference: Map Series JWS 123 MONROVIA, sheet 1 (LODE-VEIN) edition 69-DMG,
 1:50,000

Time Zone Used: ZULU

Task Organization:

1st Bde

TF 1-5
 TF 1-77
 TF 1-78
 1-14 Cav
 1-40 (155, SP) FA (DS)

Div Arty

1-43 (8", SP) FA
 2-606 (8", SP) FA
 2-607 (8", SP) FA
 2-631 (155, SP) FA
 2-661 (175, SP) FA
 HHB, 61st FA Bde
 Btry E (TA) 26th FA

2d Bde

TF 1-3
 TF 1-4
 2-14 Cav
 1-41 (155, SP) FA (DS)

Div Trp

TF 1-81
 TF 1-82
 1-441 ADA (C/V)
 * * *

3d Bde

TF 1-2
 TF 1-79
 TF 1-80
 1-42 (155, SP) FA (DS)

DISCOM

* * *

 (Classification)

(Classification)

(OPORD 21-52d Mech Div)

1. SITUATION

a. Enemy Forces. Annex A (Intelligence).

b. Friendly Forces.

(1) 3d Corps defends in zone with three divisions on line: 40th Armd Div in the north; 52d Mech Div in the center; 53d Mech Div in the south.

(2) Divisions establish their own covering force.

(3) 7th TAF supports 3d Corps with 150 CAS sorties daily during the period 30 Aug to 6 Sep 19___. Priority to 52d Mech Div.

(4) FA support.

101 FA Bde (Lance): GS 3d Corps.

(5) NGF support. Fire Support Unit (TU 36.10) supports 53d Mech Div.

c. Attachments and Detachments.

(1) 1 Aug task organization.

(2) 61st FA Bde atch eff 290100 Aug.

(3) 1-14 and 2-14 Cav atchd eff 291200 Aug.

2. MISSION

Div establish covering force along the international border, and defend in sector from DX 100320 to EX 490050 NLT 311200 Aug.

3. EXECUTION

(Classification)

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(OPORD 21-52d Mech Div)

a. Concept of Operation. Annex B (Operation Overlay).

(1) Maneuver. Division deploys covering force with bdes controlling covering force in sector. Div occupies MBA with three bdes abreast: 1st Bde in the north, 2d Bde in the center, 3d Bde in the south. Division defends MBA in sector stopping enemy forward of brigade rear boundary. Div Res (TF 1-81, TF 1-82) be prepared for commitment in area of 2d Bde and 3d Bde in priority.

(2) Fires. Priority of FA, CAS, and NGF initially to 2d Bde. Bdes plan a 10-minute conventional counterpreparation for the MBA (para 3e, Fire Spt).

b. 1st Bde: omitted.

c. 2d Bde:

(1) Establish covering force in sector.

(2) Defend in sector.

(3) Deny free access to COLUMBO.

d. 3d Bde: omitted.

e. Fire Support:

(1) FA.

Organization for Combat.

1-40 (155, SP) FA: DS 1st Bde

1-41 (155, SP) FA: DS 2d Bde

1-42 (155, SP) FA: DS 3d Bde

1-43 (8", SP) FA: Reinf 1-41 FA

(Classification)

(Classification)

(OPORD 21-52d Mech Div)

2-606 (8", SP) FA: GSR 1-40 FA

2-607 (8", SP) FA: GSR 1-42 FA

2-631 (155, SP) FA: GSR 1-41 FA

2-661 (175, SP) FA: GS

HNB, 61st FA Bde: Div Arty alternate

Btry E (TA) 26th FA: GS

(2) CAS.

(a) 1st Bde: 12 sorties daily

(b) 2d Bde: 28 sorties daily.

(c) 3d Bde: 12 sorties daily.

(3) NGF.

Allocation of NGF Support.

CA 78 (Cruiser): GS 52d Mech Div.

DD 856 (Destroyer): DS 2d Bde.

(4) Nuclear. Annex D (Nuclear Support Plan).

(5) Chemical. Annex E (Chemical Support Plan).

(6) Fire Support Coordinating Instructions.

(a) Bde FSE's plan 10-min conventional counterpreparation for

MBA.

(b) See Annex C (Fire Support) for complete guidance and instructions to all fire support agencies.

f. Air Defense Artillery:

g. Engineer:

h. Div Trp:

(Classification)

(Classification)

i. Discom:

j. Res: TF 1-81 and TF 1-82. Be prepared for commitment in area of 2d Bde and 3d Bde, in priority.

k. Coordinating Instructions:

(1) Bdes be prepared to release unengaged units.

(2) Bdes be prepared to receive attachment of units.

4. SERVICE SUPPORT (omitted)

5. COMMAND AND SIGNAL (omitted)

Acknowledge

MONTGOMERY
MG

OFFICIAL:

/s/Stinson
STINSON

ANNEXES: A-Intelligence (omitted)
B-Operations Overlay (omitted)
C-Fire Support
D-Nuclear Support Plan (TBP)
E-Chemical Support Plan (TBP)
F-Aviation (omitted)
G-Engineer (omitted)
H-Service Support (omitted)
I-Communications-Electronics (omitted)

Distribution: B

(Classification)

1. The first step is to determine the

the second step is to determine the

the third step is to determine the

the fourth step is to determine the

the fifth step is to determine the

the sixth step is to determine the

the seventh step is to determine the

the eighth step is to determine the

the

TAB C to Appendix I: Example-Fire Support Annex to Division OPORD

Note. This example depicts a fire support annex to support an OPORD in which the information in paragraph 3 for fire support has been limited. This annex supports the sample division OPORD shown at tab B. The fire support annex is an integral part of the OPORD and is issued with the OPORD.

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52d Mech Div
Zebro (CX600065), MONROVIA
280001 August 19__.
AB 101

ANNEX C (FIRE SUPPORT) TO OPORD 21 - 52d MECH DIV

Reference: Map Series JWS 123 MONROVIA, sheet 1 (LODE-VEIN) edition 69-DMG,
1:50,000

Time Zone Used: ZULU

1. GENERAL

a. Concept of Operation.

(1) Maneuver. Div deploys covering force with bdes controlling covering force in sector. Div occupies MBA with three bdes abreast: 1st Bde in the north, 2d Bde in the center, 3d Bde in the south. Div defends MBA in sector stopping enemy forward of brigade rear boundary. Div Res (TF 1-81, TF 1-82) prepares for commitment in area of 2d Bde and 3d Bde in priority.

(2) Fires. Priority of FA, CAS, and NGF initially to 2d Bde. Bdes plan a 10-minute conventional counterpreparation for the MBA (para 2, Fire Spt).

(Classification)

(Classification)

(Annex C OPORD 21-52d Mech Div)

2. FIRE SUPPORT

a. FA.

(1) General.

(a) Priority of fires initially to 2d Bde.

(b) Counterfire priorities: in order, enemy mortars and FA affecting CFA, then MBA by current SOP.

(2) Organization for Combat.

1-40 (155, SP) FA: DS 1st Bde

1-41 (155, SP) FA: DS 2d Bde

1-42 (155, SP) FA: DS 3d Bde

1-43 (8", SP) FA: Reinf 1-41 FA

2-606 (8", SP) FA: GSR 1-40 FA

2-607 (8", SP) FA: GSR 1-42 FA

2-631 (155, SP) FA: GSR 1-41 FA

2-661 (175, SP) FA: GS

HHB, 61st Bde: Div Arty alternate

Btry E (TA) 26th FA: GS

(3) Special Instructions.

(a) 2-606 FA do not exceed 50% CSR, to reinf 1-40 FA.

(b) Priority of positions to 1-43 FA and 2-631 in order.

(c) 1-41 FA plans fires of 2-631 FA for counterpreparation only.

(Classification)

(Classification)

(Annex C OPORD 21-52d Mech Div)

(d) During covering force operation, reinforced units have first priority on fires of GSR FA battalions.

b. CAS.

(1) General.

(a) Corps has 150 sorties daily, 30 Aug to Sep 19__.

(b) Eighty sorties distributed to 52d Mech Div for planning purposes.

(c) Priority of fires initially to 2d Bde.

(3) Special Instructions.

(a) Unexpended ordnance will be jettisoned into division FFA's (see Annex B to OPORD 21 - OPN overlay)! Coord with div TAC FSE.

(b) Plan four sorties per mission.

c. NGF.

(1) General.

(a) TU 36.10 with two ships supports 52d Mech Div.

(b) Priority of fires initially to 2d Bde.

(2) Allocation of NGF Support.

CA 78 (Cruiser): GS 52d Mech Div.

DD 856 (Destroyer): DS 2d Bde.

(3) Special Instructions.

(a) NGFO and NGLO's report to div MAIN FSE NLT 280915 Aug 19__.

(b) Report ammo status daily at 0800 and 1600.

d. Nuclear.

(Classification)

(Classification)

(Annex C OPORD 21-52d Mech Div)

(1) General. Apportionment for subpackages, constraints, and aimpoint lists are shown in Annex D to OPORD 21 (Nuclear Support Plan).

(2) PNL.

	<u>155-mm</u>		<u>8-in</u>	
	<u>0.1 KT</u>	<u>0.5 KT</u>	<u>0.5 KT</u>	<u>5.0 KT</u>
1-40 FA	8	8		
1-41 FA	9	11		
1-42 FA	8	6		
1-43 FA			8	8
2-606 FA			7	8
2-607 FA			6	4
2-631 FA		10		

e. Chemical.

(1) General. Appendix E to OPORD 21 (Chemical Support Plan) provides guidance, allocations, instructions, and target lists.

(2) PCL.

	<u>155-mm</u>		<u>8-in</u>	
	<u>GB</u>	<u>VX</u>	<u>GB</u>	<u>VX</u>
1-40 FA	83	41		
1-41 FA	84	43		
1-42 FA	83	41		
1-43 FA			40	14
2-606 FA			30	11

(Classification)

(Classification)

(Annex C OPOD 21-52d Mech Div)

	<u>155-mm</u>		<u>8-in</u>	
	<u>GB</u>	<u>VX</u>	<u>GB</u>	<u>VX</u>
2-607 FA			30	8
2-631 FA	100	100		

3. FIRE SUPPORT COORDINATING INSTRUCTIONS:

- a. Bde FSE's plan 10-minute conventional counterpreparation for the MBA. Distribute schedules to participants NLT 310600 Aug.
- b. 3d Corps FSCL is JOAN RIVER, eff 301800 Aug.
- c. On order, Div CFL from DX 306609 to EX 660265.

Acknowledge

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MG

OFFICIAL:

/s/Stinson
STINSON

(Classification)



TAB D to Appendix I: Example-FA Support Plan

Note. This example depicts an FA support plan, an independent document prepared by the FA operations officer to support a fire support plan presented in a force OPORD. The FA support plan is distributed directly to executing FA units through FA channels. The FA support plan is *not* part of the force OPORD. An information copy should be sent to the force FSCoord. The example shown here *has no relation* to the OPORD's in tabs A and B.

(Classification)

Copy no 2 of 20 copies
Hq 53d Mech Div Arty
Totina (WLO36670), MONROVIA
052100 May 19__
XY 202

FIELD ARTILLERY SUPPORT PLAN 19

Reference: Map Series JWT 128 MONROVIA, sheet 3 (DURIEN) edition 2-DMG,
1:50,000

Time Zone Used: ZULU

1. SITUATION**a. Enemy Forces.**

- (1) Div Arty INTSUM 5-5.
- (2) Enemy is capable of attacking fire support means with air-, missile-, and cannon-delivered nuclear weapons.
- (3) Enemy is capable of 150 fighter-bomber sorties per day in the corps zone.
- (4) All calibers of artillery have been identified within the past 24 hours to include MRL and mortars. The 122-mm how is the most predominant caliber located thus far.

(Classification)

(Classification)

(FA Spt Plan 19 - 53d Mech Div Arty)

(5) Enemy forces employing sound and flash simulators and decoy positions.

b. Friendly Forces.

(1) 3d Corps attacks 060600 May w/53d Mech Div in north and 52d Mech Div in south to secure crossings over the Ramuzza River, and destroys enemy in zone.

(2) 9th TAF supports 3d Corps with 150 CAS sorties per day for the period 060600 to 072400 May. Priority to 53d Mech Div.

(3) Attachments & Detachments: 102d FA Bde attached eff 060100 May.

2. MISSION

FA supports division attack with 20-minute preparation (conventional) commencing at H-15 minutes, with close support fires, and counterfire throughout the operation.

3. EXECUTION

a. Priority of FA Fires. Initially to 1st Bde.

b. Organization for Combat.

1-10 FA (155, SP): DS 1st Bde

1-11 FA (155, SP): DS 2d Bde

1-12 FA (155, SP): GSR 1-10 FA; o/o DS 3d Bde

1-13 FA (8", SP): GSR 1-10 FA

1-70 (8", SP): R 1-10 FA

2-71 FA (8", SP): R 1-11 FA

1-123 FA (155, SP): GS

(Classification)

(Classification)

(FA Spt Plan 19 - 53d Mech Div Arty)

1-124 FA (155, SP): GSR 1-11 FA

1-125 FA (175, SP): GS

HHB, 102 FA Bde: Div Arty alternate

Btry E (TA) 26th FA: GS

c. Target Acquisition. See Annex A (Target Acquisition).

d. Meteorology. Met section, HHB, 102d FA Bde: attached 1-10 FA.

Provide ballistic and computer messages in 1st Bde zone of operations.

e. Special Instructions.

(1) Target Casualty Criteria: 3 percent for defensive posture tgts;
5 percent for offensive posture tgts.

(2) DS bns attack all mortars as required.

f. Counterfire Matrix Code. Lower left is Bravo Foxtrot at grid UL7001.

g. Targets. See Annex B (Target List).

h. Schedules. See Annexes C and D (Schedules).

4. SERVICE SUPPORT

a. CSR: 052400 May--071200 May

	HE	ICM (AP)	ICM (DP)	WP	ILL	HCBE
155-mm	90	25	40	20	10	10
8-in	70	20	30			
175-mm	60					

b. ASP/SASP Locations.

ASP 10 (811 090)

SASP 101 (801 094)

ASP 11 (900 081)

SASP 102 (906 073)

(Classification)

(Classification)

(FA Spt Plan 19 - 53d Mech Div Arty)

5. COMMAND AND SIGNAL

a. Signal. Div CEOI Index 1-10 applies.

b. Command.

(1) Div Arty TOC - 254823.

(2) TAC FSE - To be announced.

(3) MAIN FSE - 036670

Acknowledge

GROSS
COL

OFFICIAL:

/s/Schreyach
SCHREYACH
S3

Annexes: A - Target Acquisition
B - Target List
C - Preparation Schedule
D - Groups of Targets Schedule

Distribution: C

(Classification)

(Classification)

(FA Spt Plan 19 - 53d Mech Div Arty)

ANNEX A (TARGET ACQUISITION) TO FA SUPPORT PLAN 19

Reference: Map Series JWT 128 MONROVIA, sheet 3 (DURIEN) edition 2-DMG,
1:50,000

Time Zone Used: ZULU

1. PROCESSING

Counterfire targeting information will be passed between the 102d FA Bde and the Div Arty TOC.

2. VISUAL OBSERVATION

a. Ground Observation. See capabilities overlay at tab 1 (omitted).

b. Air Observation.

(1) Four aerial observers will maintain on-call, 24-hour surveillance on the division's right flank.

(2) Four aerial observers 102d FA Bde, OPCON Div Arty.

3. RADAR, SOUND/FLASH

a. Radar.

(1) AN/TPS-25A. Section 6, E/1-26 FA (TA): Attached to 1-11 FA. Primary sector of search: road network from grid _____ to _____. Use of radar restricted to times of darkness or during periods when direct observation denied.

(2) AN/MPQ-4A:

(a) Section 1, E/1-26 FA (TA): Attached 1-10 FA. Primary sector of search ctrfire ref grid (CRG)_____.

(b) Section 2, E/1-26 FA (TA): Attached 1-10 FA. Primary sector of search CRG_____.

(Classification)

(Classification)

(FA Spt Plan 19 - 53d Mech Div Arty)

(c) Section 3, E/1-26 FA (TA): Attached 1-11 FA. Primary sector of search CRG_____.

(d) Section 4, E/1-26 FA (TA): OPCON 1st Plt (S/F) FA. Primary sector of search CRG_____.

(e) Section 5, E/1-26 FA (TA): OPCON 2d Plt (S/F) FA. Primary sector of search CRG_____.

b. Sound/Flash.

(1) 1st Platoon (S/F), E/1-26 FA (TA): Establish bases in 1st Bde zone. Primary sector of search, enemy artillery in CRG_____,_____, and_____.

(2) 2d Platoon (S/F), E/1-26 FA (TA): Establish bases in 2d Bde zone. Primary sector of search CRG_____,_____, and_____.

4. COORDINATION

Direct support battalions provide survey for radar/sound and flash/CEWI detachments in their zone of operation.

TAB 1: Capabilities Overlay (omitted)

(Classification)

(Classification)

(FA Spt Plan 19 - 53d Mech Div Arty)

ANNEX B (TARGET LIST) TO FA SUPPORT PLAN 19

Reference: Map Series JWT 128 MONROVIA, sheet 3 (DURIEN) edition 22-DMG
1:50,000

<u>Line No</u>	(a) <u>Target No</u>	(b) <u>Description</u>	(c) <u>Location</u>
1	Z101	Bn Assy Area	882 245
2	Z102	CP	905 335
3	Y103	152-mm How Psn	928 297
4	Y088 (a)	130-mm Gun Psn	968 288
5	Y089	122-mm How Btry	054 312
*	*	*	*
29	Y099 (b)	130-mm Gun Psn	034 308
30	Y101	152-mm How Psn	046 313

Remarks:

(a) Attitude is 1,400 mils

(b) Attitude is 2,000 mils

(Classification)

(Classification)

(FA Spt Plan 19 - 53d Mech Div Arty)

ANNEX C (PREPARATION SCHEDULE) TO FA SUPPORT PLAN 19

References: Map Series JWT 128 MONROVIA, sheet 3 (DURIEN) edition 22-
DMG 1:50,000

<u>Line No</u>	<u>(a)</u> <u>Unit</u>	<u>(b)</u> <u>Target No</u>	<u>(c)</u> <u>Rounds</u>	<u>(d)</u> <u>TOT</u>
1	A/1-13 FA (8-in, SP)	Z101 Z102 Z106	12 12 12	H-20 H-14 (a)
*	* * *	* *	*	* *
2	B/1-13 FA (8-in, SP)	Y103 Y088	24 12(b)	H-20 H-8
*	* * *	* *	*	* *
3	C/1-13 FA (8-in, SP)	Y099 Y101	24(c) 12	H-20 H-8
*	* * *	* *	*	* *

(For brevity only one battalion is shown, others are also scheduled)

Remarks:

(a) On-call

(b) 50% VT

(c) 50% WP

(Classification)

(Classification)

(FA Spt Plan 19 - 53d Mech Div Arty)

ANNEX D (GROUPS OF TARGETS SCHEDULE) TO FA SUPPORT PLAN 19

Reference: Map Series JWT 128 MONROVIA, sheet 3 (DURIEN) edition 22-
DMG 1:50,000

<u>Line No</u>	(a) <u>Unit</u>	(b) <u>Target No</u>	(c) <u>Rounds</u>
Group C1Y			
1	A/1-13	Z101	24
2	B/1-13	Z106	12
3	A/1-70	Z104	12
Group C2Y			
4	A/1-13	Y091	12
5	C/1-13	Y092	24(a)
6	B/1-70	Y093	12

Remarks:

(a) 50% VT

(Classification)

1. The first part of the report is a general introduction to the subject of the study. It discusses the importance of the study and the objectives of the research. It also provides a brief overview of the methodology used in the study.

2. The second part of the report is a detailed description of the study area. It includes information about the location of the study area, the population of the study area, and the characteristics of the study area. It also discusses the data sources used in the study.

3. The third part of the report is a detailed description of the study results. It includes information about the findings of the study, the conclusions drawn from the findings, and the implications of the findings. It also discusses the limitations of the study and the need for further research.

4. The fourth part of the report is a conclusion and a summary of the study. It includes information about the overall findings of the study, the conclusions drawn from the findings, and the implications of the findings. It also discusses the limitations of the study and the need for further research.

5. The fifth part of the report is a list of references. It includes information about the sources of information used in the study, such as books, articles, and other documents. It also includes information about the authors of the sources and the dates of publication.

6. The sixth part of the report is a list of appendices. It includes information about the additional materials used in the study, such as maps, tables, and figures. It also includes information about the authors of the materials and the dates of publication.

7. The seventh part of the report is a list of footnotes. It includes information about the additional information provided in the report, such as definitions, abbreviations, and other details. It also includes information about the authors of the footnotes and the dates of publication.

8. The eighth part of the report is a list of acknowledgments. It includes information about the people and organizations that provided support and assistance during the study. It also includes information about the authors of the acknowledgments and the dates of publication.

9. The ninth part of the report is a list of indexes. It includes information about the subjects and topics covered in the report, such as the names of the subjects, the dates of the subjects, and the locations of the subjects. It also includes information about the authors of the indexes and the dates of publication.

TAB E to Appendix I: Example-CAS Plan

Note. This example depicts a CAS plan, an independent document prepared in the FSE by the S3/G3 assistant responsible for air. The CAS plan provides the essential information required by CAS agencies to support a fire support plan presented in a force OPORD. The CAS plan is *not* part of the OPORD and is distributed through CAS channels. An information copy should be sent to the force FSCoord. The example depicted here has no relation to the OPORDs in tabs A and B.

(Classification)

Copy no 2 of 30 copies
53d Mech Div
Yanko (WLO70700), MONROVIA
101900 July 19__
XA 222

CLOSE AIR SUPPORT PLAN 45

Reference: Map Series JWT 133 MONROVIA, sheet 6 (LANCE) edition 68 DMG
1:50,000

Time Zone Used: ZULU

1. SITUATION

- a. Enemy. Annex A (Intelligence) OPORD 45.
- b. Friendly. Para 2 OPORD 45.

2. MISSION

Available CAS neutralize enemy reserves, FA and defensive positions; provide aircraft on strip alert for on-call targets.

3. EXECUTION

- a. Estimated 80 sorties available during period 120600-170300 Jul.

(Classification)

(Classification)

(CAS Plan 45-53d Mech Div)

Priority to 1st Bde.

b. On-call targets - see Inclosure 1 (Target List).

c. 3d Corps FSCL is Hwy 27.

4. SERVICE SUPPORT (omitted)

5. COMMAND AND SIGNAL

a. Command.

(1) TAC FSE location: TBA

(2) MAIN FSE: 070070

(3) DASC collocated with corps TOC (955035)

(4) Preplanned requests for CAS to MAIN FSE by 2400 daily.

b. Signal.

(1) Index 1-10, CEOI eff 060001 Jul.

(2) Airborne FAC available on request via appropriate TACP.

Acknowledge

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Annexes: A-On-Call Target List

Distribution: Special

(Classification)

(Classification)

(CAS Plan 45-53d Mech Div)

ANNEX A (ON-CALL TARGET LIST) TO CLOSE AIR SUPPORT PLAN 45

References * * *

Line No	(a) Target No	(b) Description	(c) Location
1	Z101	Def Psn	9210 2810
2	Z102	Choke Point for Armor	9420 3010
3	Z103	Susp Bn Assy Area	9380 2940
* * *	* * *	* * *	* * *
10	Z110	Tk Co Assy Area	9080 3410

Remarks

- Sorties for on-call targets on strip alert.
- Request 4 arcft per msn; load 5.
- Neutralization is desired - all targets.

(Classification)



TAB F to Appendix I: Example-NGF Plan

Note. This example depicts an NGF plan, an independent document prepared in the FSE by the NGFO or NGLO. The NGF plan provides the essential information required by the ANGLICO and supporting ships to support a fire support plan presented in a force OPORD. The NGF plan is *not* part of the OPORD and is distributed through NGF channels. An information copy should be sent to the force FSCoord. The example depicted here has no relation to the OPORD's in tabs A and B.

(Classification)

Copy no 2 of 20 copies
53d Mech Div
Sampan (WLO20220) MONROVIA
121200 April 19__
ZB 121

NAVAL GUNFIRE PLAN 12

Reference: Map Series JXT 111 MONROVIA, sheet 12 (KUAI) edition 70-DMG
1:50,000

Time Zone Used: ZULU

1. SITUATION

- a. Enemy Forces. Annex A (Intelligence) OPORD 12.
- b. Friendly Forces. Para 2, OPORD 12.

2. MISSION

NGF ships provide direct and general support fires in support of the division.

3. EXECUTION

- a. General. Request for NGF support through appropriate FSE or division MAIN FSE.

(Classification)

(Classification)

(NGF Plan 12 - 53d Mech Div)

b. Organization.

(1) General. TU 36.30 supports division during period 140500 - 151200 Apr.

(2) Allocations:

CA 75 (Hvy cruiser): GS 1st Bde.

CA 76 (Hvy cruiser): GS 2d Bde.

DD844 (Destroyer): DS TF 1-10 Mech.

DD845 (Destroyer): DS TF 1-12 Mech.

c. Miscellaneous.

(1) Target List - see Inclosure 1.

(2) Zones of fire and fire support stations - see Inclosure 2.

4. SERVICE SUPPORT (omitted)

5. COMMAND AND SIGNAL

a. Signal.

(1) Div CEOI Index 1-10.

(2) Signal for lifting fires - Div SOP.

(3) Annex G (C-E) to OPORD 12.

b. Command.

(1) TAC FSE location - to be announced.

(2) MAIN FSE - 020220

Acknowledge

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MG

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(Classification)

(NGF Plan 12 - 53d Mech Div)

OFFICIAL:

/s/Stinson
STINSON
G3

ANNEXES: A-Target List

B-Zone of Fire Overlay

Distribution: Special

(Classification)

(Classification)

(NGF Plan 12 - 53d Mech Div)

ANNEX A (TARGET LIST) TO NAVAL GUNFIRE PLAN 12

REFERENCES: * * *

Line No	(a) Target No	(b) Description	(c) Location
1	Z103(a)	Tank Assy Area	182940
2	Z107(a)	Supply Dump	201881
3	Z108(a)	Def Psn	281957
4	Y109(b)	Bunkers	341021
5	Y110(b)	Susp CP	300028

Remarks:

(a) Request 1st Bde maintain on-call.

(b) Request TF 1-12 Armor maintain on-call.

(Classification)

(Classification)

(NGF Plan 12 - 53d Mech Div)

ANNEX B (ZONES OF FIRE OVERLAY) TO NAVAL GUNFIRE PLAN 12

REFERENCES: * * *
(omitted)

(Classification)



TAB G to Appendix I: Example-Nuclear Support Plan to Division OPORD

Note. This example depicts a nuclear support plan to support a force OPORD. The format and content are the same for supporting an OPORD *with or without* a fire support annex. Therefore, this plan supports the OPORD in tab A which has no fire support annex or the OPORD in tab B which does have a fire support annex (tab C). Because nuclear planning progresses at a different rate, the nuclear support plan may be distributed at a time different from the OPORD it supports; and the distribution list for the nuclear support plan may be more limited than that of the OPORD.

(Classification)

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52d Mech Div
Zebro (CX600065), MONROVIA
301345 August 19__
AB 101

ANNEX _____ (NUCLEAR SUPPORT PLAN) TO OPORD 21-52d MECH DIV

Reference: Map Series JWS MONROVIA, sheet 1 (LODE-VEIN) edition 69-DMG,
1:50,000

Time Zone Used: ZULU

1. SITUATION.

- a. Enemy Forces. Annex A (Intelligence), OPORD 21.
- b. Friendly Forces. Para 2, OPORD 21.
- c. Assumptions.
 - (1) Corps defenses have been severely tested.
 - (2) Corps has requested release of the nuclear package.

2. MISSION.

52d Mech Div provide nuclear fire support for the authorized corps package.

(Classification)

(Classification)

(Annex__, Nuc Spt Plan OPORD 21-52d Mech Div)

3. EXECUTION

a. Concept. Two division subpackages (A and B) are planned to support corps contingencies A and B.

b. Constraints.

(1) Preclude the following collateral damage with 99% assurance in population centers over (--) population.

(a) 5% incidence of injuries requiring hospitalization to personnel in the open.

(b) 5% incidence of moderate damage to single-story masonry buildings.

(2) Do not exceed negligible risk to unwarned exposed friendly troops.

c. Nuclear strike warnings-div SOP.

d. Nuclear aimpoints-see appendix 1 for subpackage A and appendix 2 for subpackage B.

4. SERVICE SUPPORT

a. General. Annex _____ (Service Support) OPORD 21.

b. Material/Services.

(1) PNL: as directed in OPORD 21.

(2) SASP locations: 101 (549 520); 102 (617 508).

5. COMMAND AND SIGNAL OPORD 21.

(Classification)

(Classification)

(Annex___, Nuc Spt Plan OPORD 21-52d Mech Div)

Acknowledge

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/s/Stinson
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APPENDIXES: 1-Subpackage A
2-Subpackage B

Distribution: C

(Classification)

(Classification)

APPENDIX 1 (SUBPACKAGE A) TO ANNEX _____ (NUCLEAR SUPPORT PLAN) TO OPORD
21 - 53d MECH DIV

References: Map series JWS MONROVIA, sheet 1 (LODE-VEIN) edition 69-DMG,
1:50,000

<u>MEANS</u>	<u>YIELD</u>	<u>TARGET NO</u>	<u>DESCRIPTION</u>	<u>AIMPOINT</u>
155-mm How	0.1	Z100	Choke Pt	921 851
		Z101	Ave of Approach	258 841
		Z102	Ave of Approach	981 845
	*	*	*	*
	0.5	Z103	Reserve Area	914 928
		Z104	Reserve Area	968 938
8-in How	0.5	Z122	Choke Pt	917 901
		Z123	Bridge	998 916
	*	*	*	*
	5.0	Z142	Assy Area	921 880
Lance	10.0	Z143	Tank Assy Area	942 021
CAS	10.0	Z144	Tank Assy Area	921 098
	10.0	Z145	Supply Dump	041 097
ADM	0.5	Z146	Ave of Approach	950 871
		Z147	Key Terrain	985 874

Timespan: (--) minutes

Constraints: Para 3b of Nuclear Support Plan

(Classification)

(Classification)

APPENDIX 2 (SUBPACKAGE B) TO ANNEX _____ (NUCLEAR SUPPORT PLAN) TO OPORD
21 - 53d MECH DIV

References: Map series JWS MONROVIA, sheet 1 (LODE-VEIN) edition 59-DMG,
1:50,000

<u>MEANS</u>	<u>YIELD</u>	<u>TARGET NO</u>	<u>DESCRIPTION</u>	<u>AIMPOINT</u>
155-mm How	0.1	Z401	Ave of Approach	961 021
	1	Z402	Ave of Approach	970 962
*	*	*	*	*
8-in How	0.5	Z419	Tank Elms	009 927
*	*	*	*	*
	2.0	Z442	Ave of Approach	984 971
	5.0	Z443	Assy Area	975 075
Lance	5.0	Z444	Regt CP	038 021
	10.0	Z445	Assy Area	008 078
CAS	10.0	Z446	Supply Dump	065 091
ADM	0.5	Z447	Ave of Approach	062 918
	1.0	Z448	Key Terrain	042 925
		Z449	Key Terrain	025 918
	2.0	Z450	Ave of Approach	020 938

Timespan: (--) minutes

Constraints: Para 3b of Nuclear Support Plan

(Classification)



TAB H to Appendix I: Example-Chemical Support Plan to Division OPORD

Note. This example depicts a chemical support plan to support a force OPORD. The format and content are the same for supporting an OPORD *with or without* a fire support annex. Therefore, this sample plan supports the OPORD in tab A which has no fire support annex or the OPORD in tab B which does have a fire support annex (tab C). The chemical support plan may be issued at a different time than the OPORD and may have a more limited distribution than the OPORD.

(Classification)

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52d Mech Div
Zebro (CX600065), MONROVIA
301345 August 19__
AB 101

ANNEX _____ (CHEMICAL SUPPORT PLAN) TO OPORD 21-52d MECH DIV

Reference: Map Series JWS MONROVIA, sheet 1 (LODE-VEIN) edition 69-DMG,
1:50,000

Time Zone Used: ZULU

1. SITUATION

- a. Enemy Forces. Annex A (Intelligence), OPORD 21.
- b. Friendly Forces. Para 2, OPORD 21.
- c. Assumption. The employment of chemical munitions has been authorized by corps.

2. MISSION

FA and CAS provide chemical fires in support of division operations.

(Classification)

(Classification)

(Annex Chem Spt Plan OPORD 21-52d Mech Div)

3. EXECUTION

a. Concept. On-call chemicals (GB and VX munitions) are planned for delivery by FA and CAS means.

b. Targets. See chemical target list (appendix 1).

c. Coordinating Instructions. Predicted weather for period 31 Aug-5 Sep 19__ : windspeed/direction-5 MPH/SW; average temperature-70.

Conditions favor our use of chemicals.

4. SERVICE SUPPORT

a. General. Annex_____(Service Support) OPORD 21.

b. Material/Services.

(1) PCL: as directed in OPORD 21.

(2) SASP location: 101 (549 520); 102 (617 508).

5. COMMAND AND SIGNAL OPORD 21.

Acknowledge

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MG

OFFICIAL:

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APPENDIX: 1-Chemical Target List

Distribution: C

(Classification)

(Classification)

APPENDIX 1 (CHEMICAL TARGET LIST) TO ANNEX _____ (CHEMICAL SUPPORT PLAN)
TO OPOD 21 - 52d MECH DIV

References: Map series JWS MONROVIA, sheet 1 (LODE-VEIN) edition 69-DMG,
1:50,000

<u>LINE NO</u>	(a) <u>TARGET NO</u>	(b) <u>DESCRIPTION</u>	(c) <u>LOCATION</u>
1	Y209 (b)	Inf Assy Area	875 005
2	Y210 (b)	Def Psn	694 106
3	Y211 (a)	Def Psn	891 131
*	*	*	*
8	Z201 (b)	Regt CP	058 981

Remarks:

(a) CAS attack means.

(b) FA attack means.

(Classification)



Appendix J Fire Support For Special Operations

<i>PARAGRAPH</i>		<i>PAGE</i>
Section I	Fire Support of Military Operations in Special Environments	J-2
J-1	Military Operations in Built-Up Areas (MOBA)	J-2
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J-3	Jungle Operations	J-5
J-4	Desert Operations	J-6
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J-6	Air Assault Operations	J-8
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J-8	River Crossings	J-16
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J-10	Amphibious Operations	J-18

Appendix J

Fire Support for Special Operations

WHY

- Special considerations apply to the integration of fire support and maneuver into the battle plan both in special environments and in operations requiring special training, equipment, or techniques.

WHAT

- This appendix tells you:
 - what special fire support considerations are applicable in:
 - built-up areas,
 - mountains,
 - jungles,
 - deserts, and
 - northern regions;
 - what special fire support considerations are applicable in:
 - air assault operations,
 - airborne operations,
 - river crossings,
 - counterguerilla operations, and
 - amphibious operations.

Section I. FIRE SUPPORT OF MILITARY OPERATIONS IN SPECIAL ENVIRONMENTS

J-1. Military Operations in Built-up Areas (MOBA)

a. Characteristics of Urban Combat

The massive growth in built-up areas and manmade changes in the landscape will significantly affect the conduct of future battles—especially in Western Europe. Avoidance of these areas is no longer possible. The defender has the advantage in the use of built-up areas. He has superior protection as well as concealment and covered routes of movement. The attacker can isolate and bypass *some* built-up areas but will be required to attack others. He is faced with fighting into a well-defended position. Both attacking and defending forces will take advantage of cover and concealment offered by built-up areas but will be hampered by reduced visibility. Commanders at all levels must consider the advantages and disadvantages of using a built-up area within the overall concept of their particular operation. The decision to attack or defend an urban area may have political as well as operations impact. MOBA may involve both armored/mechanized or light infantry forces. For further details on how maneuver units fight in built-up areas, see FM 90-10, *Military Operations in Built-up Areas*.

b. Categories of Built-up Areas

Urban areas can be roughly divided into four categories, each presenting different problems and opportunities to tactical commanders:

- small villages (population 1,000 or less),
- strip areas, generally interconnecting built-up areas between villages and towns along major roads and valleys,
- towns and small cities (population up to 100,000 and not part of a major urban complex, and

Appendix L

Nonnuclear Target Analysis

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Appendix L

Nonnuclear Target Analysis

WHY

- Target analysis is basic to effective fire support planning and coordination. The FSCOORD, FSO, and FDO must understand and apply the techniques and considerations of target analysis to do their jobs.

WHAT

- This appendix outlines the considerations for:
 - determining the precedence of attack;
 - determining the most suitable weapons and ammunition;
 - determining the method of attack;
 - predicting weapons effects.

L-1. General

a. Target analysis is the examination of a potential surface target to determine its significance to the mission of the force, the need for immediate attack, and the capability and suitability of available fire support elements for attack. Target analysis is the responsibility of FSCOORD's, FSO's, and FDO's, and is performed in varying degrees at all echelons in fire support and fire direction facilities.

b. Target analysis is performed in the fire support facilities to aid the FSCOORD and FSO to properly advise the force commander, attack targets in the proper priority, designate the most effective fire support means available to attack targets, plan the amount and type fire support and munitions required, and avoid inadequate effects or unnecessary overkill. All FSCOORD's and their FSO's must understand and be able to apply target analysis procedures even though at division level and above there are officers specifically trained to perform this function (see app G).

c. The FDO in an FA fire direction facility must also perform target analysis. Though more limited in scope, the analysis by the FDO considers the same factors as an analysis in a fire support facility. The FDO analyzes a specific weapon/target combination and is primarily interested in determining the method of attack, the most effective shell/fuze combination, and the amount of ammunition required to achieve a specific result. He selects and orders the units to fire and the type and volume of munition to attack the target.

d. Target analysis considers:

- the commander's guidance on priorities of targets, desired effects (suppression, neutralization, destruction), and acceptable safety limits;

- target characteristics and location;
- characteristics of available fire support means; and
- terrain and weather.

The completed analysis forms the basis for deciding to *immediately attack* a target with a specific weapon and munition; *defer attack* by placing the target on-call; *pass the target* to another echelon for analysis; or *disregard* the target. All targets should be analyzed as they are received, using all available information. As additional information becomes available, the target should be reevaluated. The reevaluation may upgrade, downgrade, or leave unchanged the original analysis.

e. The amount of time devoted to target analysis and the thoroughness of the analysis depends on the

- amount of target information,
- availability of suitable means to attack the target,
- amount of coordination required, and
- urgency of engagement.

Table L-1. Categories of Targets

Category	Example
1. Area Personnel Targets	Squad Platoon Battery Company
2. Small Personnel Targets	Observation post Small patrol Command post
3. Small Materiel (Point) Targets	Tanks Armored personnel carriers Bunker, machinegun
4. Area Materiel Targets	Armored formation Truck park Ammo dump POL dump Communication center

L-2. Determining the Precedence of Attack

In determining the precedence of attacking targets, primary consideration should be given to the priority for targets. Other considerations in determining the precedence of attack of one target over another are

- target characteristics,
- target location,
- terrain, and
- weather.

a. Target Characteristics.

Targets encountered on the battlefield vary considerably in composition, degree of protection (shielding), size, shape, mobility, and recuperability. To simplify the comparison of effectiveness of a particular weapon or round to another, targets have been divided into four categories (table L-1). Several examples are listed in each category. Under certain conditions, some examples could be listed in more than one category. For example, a motorized rifle battalion could be both a category 1 and a category 4 target.

For personnel targets, in particular, the *posture* of the target is extremely important.

Target postures, normally used for *personnel* targets, are standing, prone, and foxhole. For computational purposes, it is assumed that the personnel are wearing helmets and that personnel in foxholes are in a crouching position. When describing a given target's posture, consideration must be given to the protection afforded by the terrain; e.g., an infantry platoon may be attacking in a standing posture; however, the irregularities of the terrain may provide protection equivalent to the prone position.

Personnel targets will normally seek a more protective posture during an engagement. This change, e.g., from standing to prone position, is called *posture sequencing*. This characteristic causes considerable degradation of effects as additional volleys are fired, and it is the reason for the continual emphasis on surprise or mass fires.

For purposes of analysis, personnel targets in the *offense* are considered to be one-half standing and one-half prone when the first volley of fire is delivered, and all prone for subsequent volleys. In a *defensive* configuration, personnel targets are considered to be one-half prone and one-half in foxholes for the initial volley, and all in foxholes for subsequent volleys.

b. Target Location.

The proximity of the target to friendly troops and the accuracy of the target location must be weighed. The importance of certain targets that are not accurately located may justify the fire of several units to insure coverage.

c. Terrain.

The terrain in the target area has direct effect on the vulnerability of a target. Rugged terrain affords considerable natural cover and makes target location difficult. Certain terrain provides a complete defile from some angles of approach but not others, thus influencing the unit and munitions to be employed. At times it may be necessary to

move a firing unit to another position from which it can deliver effective fire on the target. The nature of the vegetation in the target area should be considered in the selection of ammunition.

d. Weather.

Weather greatly affects the capability of attack by air and, to some extent, by naval gunfire and FA. Weather is of particular importance in evaluating a target to be attacked with ICM, smoke, or illumination projectiles.

L-3. Desired Effect on Targets

The analyst must comply with the commander's guidance on the effects he desires be attained.

□ *Suppression* of a target limits the ability of the enemy *personnel* in the target area. Firing HE-VT creates apprehension or surprise and causes tanks to button up, reducing their combat effectiveness. Smoke is used to blind or confuse. The effect of suppressive fires usually lasts only so long as the fires are continued. This type fire is used against likely, suspect, or inaccurately located enemy firing positions. It may be delivered by small delivery units or means and requires a low expenditure of ammunition.

□ *Neutralization* of a target knocks the target out of the battle temporarily. Experience has shown that 10 percent or more casualties will neutralize a unit. The unit will become effective again when the casualties are replaced and damage is repaired. Neutralization fires are delivered against targets located by accurate map inspection, by indirect fire adjustment, or by a target acquisition device. The assets required to neutralize a target vary according to the type and size of the target and the weapon/ammunition combination used.

□ *Destruction* puts the target out of action permanently. Thirty percent or more casualties or materiel damage, inflicted during a short time period, normally renders

a unit permanently ineffective, depending on the type and discipline of the enemy force. Direct hits are required to destroy hard materiel targets. Targets must be located by accurate map inspection, by indirect fire adjustment, or by a target acquisition device. The assets required vary. However, destruction usually requires large expenditures of ammunition from many units. Destruction of armored or dug-in targets with area fire weapons (FA, mortars, NGF) is not economical.

When discussing antimateriel effectiveness, the following kill criteria or damage categories are also used:

□ *Mobility (M) Damage (Kill)* means a loss of tactical mobility due to damage which cannot be repaired by the crew on the battlefield. This is usually called an "M" Kill. Thus, an "M" Kill means that a vehicle is not capable of controlled movement on the battlefield.

□ *Firepower (F) Damage (Kill)* is a loss of tactical mobility due to damage which cannot be repaired by the crew on the battlefield. Thus, there is an "F" Kill when controlled fire cannot be directed from the main armament.

□ *Catastrophic (K) Damage (Kill)*. A vehicle has sustained a "K" Kill when both "M" and "F" Kills occur, and when the damage is not economically repairable.

L-4. Determining the Most Suitable Weapons/Ammunition

The characteristics of available fire support means must be considered to determine which is most capable of producing the desired effects on the target.

a. Weapons.

The FSCOORD considers all weapon systems available. He also considers the vulnerability of these systems to enemy counteractions. Response times are compared. The FSCOORD must have a thorough knowledge of weapon characteristics and he can seek advice from

representatives of the various fire support means. At some levels and facilities, Joint Munitions Effects Manuals (JMEM) provide data on the effects of various weapons.

b. Ammunition.

The nature of the target and its surroundings and the desired effects dictate the type and amount of ammunition to be used. The ammunition resupply system may sometimes rule out a most desirable *weapon-ammunition* combination. An example of this is a situation in which heavy mortars with their rapid rate of HE fires are desired, but such fires would impose a considerable resupply problem on the parent organization. Some types of fires require greater expenditures than others. *Suppression* and *neutralization* fires usually consume less ammunition than *destruction* fires.

c. Personnel Targets.

Air-delivered (cluster bomb units (CBU)) munitions are extremely effective against personnel in the open. Improved conventional munitions (ICM) are the most effective *cannon* munitions against personnel targets in the open or in light armored vehicles. High explosive ammunition, particularly when fired with proximity (VT) fuze, will also be highly effective in suppression or neutralization type fires. On occasion, it is necessary to flush personnel out of their protection using selected types of munitions (e.g., CS) and subsequently attack them with other means. Residual effects can also be obtained through the use of scatterable mines (155-mm only) or random delay, ICM (HJ only).

d. Hardened Targets.

Heavier weapons are best suited to the destruction or neutralization of bunkers, pillboxes, dugouts with heavy overhead cover, and other defensive works.

e. Materiel Targets.

Materiel targets are made ineffective by *suppressing* or *neutralizing* the operating personnel and by *destroying* the equipment. Because personnel usually work in the area of the equipment, the analyst is concerned with

both elements of these targets. Heavy weapons are best suited to attack these targets.

f. Large Target Areas.

Often several targets are located within one large area. In this case, it is necessary to consider each individual target and to designate a conventional means of attack for each.

g. Troop Safety.

Troop safety is a major concern for all close-in targets. The FSCOORD must insure that fires do not endanger troops, equipment, and facilities.

h. Accuracy of the Firing Means.

The means selected must be sufficiently accurate to accomplish the desired results. Generally, weapons with large probable errors are not used for close fires. All naval gunfire and airstrikes in close proximity to friendly troops must be adjusted or given special consideration. Close-in targets for airstrikes should be carefully marked, the location of friendly troops should be given to the aircraft, and if possible the strikes should be controlled by an air controller (either in the air or on the ground).

i. Adverse Effects in Target Area.

Residual effects from special ammunition will influence the occupation of an area, and family of scatterable mines (FASCAM) munitions may alter the direction of movement of supported elements. If supported troops are to occupy an area immediately following attack by certain munitions, conditions may be hazardous. The analyst must consider such hazards and advise the commander. Weather changes may alter choices of certain munitions (e.g., smoke, illumination, and chemical). Incendiary effects of fire support munitions may make areas untenable for supported forces. These effects can also *deny* the enemy use of selected terrain.

j. Time Requirements.

Three primary functions influence the time needed to attack a target:

- the time required to process the target

information, perform target analysis, and reach a decision as to the most suitable weapon and ammunition for attack of the target;

- the time required to compute firing data and to secure command approval in situations not covered by directives, guidance, or policies; and
- the reaction time of the selected weapons systems.

L-5. Determining the Method of Attack

The FSCOORD must consider several factors to determine the *method* of target attack. These include:

a. Location of Aimpoints.

For small targets, fires are concentrated on the center of the target. However, on a large target, separate aimpoints are designated to distribute the fires and insure adequate coverage.

b. Surprise Fires.

While this factor relates to *indirect fires* primarily, it can also apply to attacks by *aerial fire support means*. Accurate surprise fires produce the most effective results in that they strike before the target can take evasive actions. Time on target (TOT) procedures place initial rounds from all units on the target simultaneously and achieve the greatest surprise. Fires from several firing positions should be massed on a common target to exploit surprise.

c. Density.

For most targets, uniform density of fires is needed. Several techniques for indirect fire weapons produce such results. These include zone and sweep fires by a single unit or simultaneous attack by multiple units on different portions of the target. The latter is more productive.

d. Duration.

While intense fires of short duration generally produce the best results, the situation may dictate fires to be continued across longer periods of time. Some examples

of this need are H&I fires needed during the hours of darkness; smoke fires that screen the movement of supported forces; and illumination fires of long duration (continuous illumination).

L-6. Munitions Employment Criteria

When properly delivered against appropriate targets, the various fire support means can be the decisive factor in a battle. The FSCOORD must insure that maximum effectiveness is attained from every mission fired and every sortie flown against the enemy. The criteria used by the FSCOORD and his assistants to determine the appropriate munition to be used in a given situation are both tactical and technical. Three factors must be fully analyzed to gain the greatest effectiveness from munitions: target vulnerability, weapons characteristics, and delivery accuracy.

a. Target Vulnerability.

The analysis of a target starts with its weak points. Where the target is most vulnerable and what fires will best exploit its weaknesses is influenced by the degree of damage desired. Often there is a tendency to overkill the target when less ammunition would suffice. The FSCOORD must ascertain the degree of effects needed (destruction-neutralization-suppression) to support the tactical plan. The acceptable degree of damage is that level that yields a significant military advantage. For example, fire from a heavily protected machinegun emplacement may be silenced by obscuration through FA smoke and subsequent engagement by direct fire as opposed to the expenditure of an excessive number of HE rounds required for destruction.

b. Weapons Characteristics.

To match a munition to a target, the coordinator must know what damage a munition can produce as well as the damage required to defeat a target. The lethality of a

munition must be matched to the specific vulnerability of the target. Thus the coordinator must understand the damage potential of these effects from specific munitions:

- ☐ blast,
- ☐ cratering,
- ☐ fragmentation,
- ☐ incendiary, and
- ☐ penetration.

Specific information regarding the effects of various munitions is found in JMEM's.

c. Delivery Accuracy.

The optimum weapon system—one which achieves a target hit with each projectile—is not now available. Current weapon systems have inaccuracies that are the product of several factors, and their inaccuracies must be considered by the FSCOORD.

L-7. Predicting Weapons Effects

The analyst predicts weapons effects based on the above three factors. The time available to perform this analysis will largely determine the tools used. An analyst at a division fire support element or division artillery TOC may use the JMEM pamphlet for guidance; the fire direction officer at battalion or battery level may, because of time constraints, use a graphical method such as the Graphical Munitions Effects Table (GMET) or rely on experience factors. These methods are discussed below.

a. JMEM's.

Effectiveness tables published in Joint Munitions Effectiveness Manuals for Surface-to-Surface Weapons (JMEM/SS) provide guidance for determining the expected fraction of casualties to personnel targets or damage to materiel targets. The JMEM/SS's are published as field manuals. The manuals currently available for all systems are listed at appendix M. Most of the basic data for these manuals was obtained from test firings and actual combat

performance; however, some data was derived from mathematical modeling.

b. JMEM Content.

The effects data included in these manuals incorporates reliability, delivery accuracy, and munitions lethality against a representative spectrum of targets. Effects are listed for the following targets and conditions:

- Personnel targets. Target radii of 50, 100, 150, 200, and 250 for cannon systems and 250 through 650 meters for missile systems. Data for standing, prone, and foxhole postures are listed.
- Materiel targets. A short description of the following targets and their vulnerabilities is included: 140-mm rocket and launcher, FROG-4 rocket and associated launcher, AAA fire control radar, 152-mm field gun/howitzer, T-55 medium tank (M109A1 manual only), and ZIL-157 truck (M109A1 manual only). Additional materiel targets are added to the JMEM's as data becomes available. Thus, manuals for some systems will include more targets than those for other systems.
- Environment—*Open terrain, marsh grass, and temperate forest.*
- Methods of delivery—*observer adjusted and Met + VE.*
- Battery formations—*6-gun battery, Lazy W and Star; and 4-gun battery, Stagger and Diamond.*
- Ammunition—*HE, ICM, and chemical.*

The computational assumptions, defeat criteria, and instructions for use are included in each manual.

Caution: There is no assurance that the expected fraction of damaged casualties will be provided by any number of volleys in a

given situation. Although not precisely within the mathematical definition, the method of averaging data used for the tables will result in less damage being realized for approximately 50 percent of the rounds, and conversely, greater damage for the other 50 percent of the rounds.

When terrain gun positioning has been used and corrections applied to achieve a normal sheaf in the target area, these effects will normally be best approximated by use of the Lazy W and Stagger formations.

c. Computer Applications.

The data necessary to compute the volume of fire necessary to achieve a desired level of effects has been included in the software programs for the tactical fire direction system (TACFIRE), to be fielded in the 1980 time frame. The programs provide for the presentation of a recommended solution for the volume and type of fire required to meet the commander's criteria and other input data. The fire direction officer may then accept, modify, or reject the recommended solution based on his military judgment. Similar programs will be available to the fire support elements.

d. Graphical Munitions Effects Tables (GMET).

The use of JMEM effectiveness data for field use has been greatly simplified by the development of GMET. The tables, or scales, of standard GFT size, provide the effects achieved for one volley or the number of battery/battalion volleys required to achieve certain levels of effectiveness against personnel targets. Data is provided for observed or Met + VE methods of fire, target radii from 50 to 250 meters, and the following ammunition selections: HE with point detonating and proximity fuzes and antipersonnel ICM. A complete listing of GMET's follows.

Appendix M

References

M-1. Army Regulations (AR)

11-17	Chemical Surety Program
50-5	Nuclear Surety
50-100 series	Safety Rules for Army Nuclear Weapons Systems
55-203	Movement of Nuclear Weapons
310-25	Dictionary of US Army Terms
310-50	Authorized Abbreviations and Brevity Codes

M-2. Field Manuals (FM)

1-100	Army Aviation Utilization
3-10 series	Employment of Chemical Agents
3-22	Fallout Prediction
6-10	Field Artillery Communications
6-40	Field Artillery Cannon Gunnery
6-40-5	Modern Battlefield Cannon Gunnery
6-50	The Field Artillery Cannon Battery
6-121	Field Artillery Target Acquisition
7-8	The Light Infantry Platoon/Squad
7-10	The Rifle Company, Platoons, and Squads
7-20	The Infantry Battalions
17-1	Armor Operations
17-12	Tank Gunnery (How to Fight)
17-15	Tank Units, Platoon, Company, and Battalion
17-30	The Armored Brigade
17-50	Attack Helicopter Operations
17-95	The Armored Cavalry Regiment
20-60	Battlefield Illumination
21-26	Map Reading
21-30	Military Symbols
21-40	Chemical, Biological, Radiological and Nuclear Defense
30-5	Combat Intelligence
30-40	Handbook on Soviet Ground Forces
30-100 series	Opposing Forces
31-10	Denial Operations and Barriers (will be FM 90-7)
31-16	Counter guerrilla Operation (will be FM 90-8)
44-1	US Army Air Defense Artillery Employment
44-62	Air Defense Artillery Automatic Weapon Gunnery
57-35	Airmobile Operations
71-1	The Tank and Mechanized Infantry Company Team
71-2	The Tank and Mechanized Battalion Task Force
71-100	Brigade and Division Operations (Mechanized and Armor)
71-101	Brigade and Division Operations (Infantry/Airborne/Airmobile)
90-2 (TBP)	Tactical Deception

M-2. Field Manuals (FM)—Continued

90-3	Desert Operations
90-5	Jungle Operations
90-6	Mountain Operations
90-7	Denial Operations and Barriers
90-10	Military Operations in Built-up Areas
90-11	Northern Operations
90-13	River Crossing Operations
100-5	Operations
100-5-1	Conventional Nuclear Operations
100-26	The Air-Ground Operations System
100-44	Army Procedures for Airspace Management in a Combat Zone
101-5	Command and Control of Combat Operations
101-31-1	Staff Officers Field Manual: Nuclear Weapons Employment, Doctrine, and Procedures
101-31-2	(S) Staff Officers Field Manual: Nuclear Weapons Employment Effects Data (U)
105-5	Maneuver Control

M-3. Technical Manuals (TM)

9-1300-203	Artillery Ammunition
15-1520-221-10	Operator's Manual: Army Model AHIG Helicopter
39-0-1A	Numerical Index to Joint Atomic Weapons Publications
39-4-1	Glossary of Nuclear Weapons Material and Related Terms

M-4. Army Training and Evaluation Programs (ARTEP)

6 series	Field Artillery Organizations
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M-5. Joint Munitions Effectiveness Manuals

(C)FM 101-50-1	Joint Munitions Effectiveness Manual/Air-to-Surface: Weapon Effectiveness, Selection and Requirements, Air-Delivered Non-Nuclear (U)
(C)FM 101-50-6	Joint Munitions Effectiveness Manual/Air-to-Surface: Air Delivered Non-Nuclear Munitions Effectiveness, A-1E (U)
(C)FM 101-50-20	Joint Munitions Effectiveness Manual/Air-to-Surface: Weapon Characteristics Handbook (U)
(C)FM 101-50-25	Air Delivered Non-Nuclear Munitions Effectiveness: Radar Deliveries, Vol 1 (U)
(C)FM 101-60-1	Joint Munitions Effectiveness Manual/Surface-to-Surface: Effectiveness Data for Mortar, 81-mm: M29 (U)
(C)FM 101-60-2	Joint Munitions Effectiveness Manual/Surface-to-Surface: Effectiveness Data for Howitzer, 105-mm: M101A1 (U)
(C)FM 101-60-3	Joint Munitions Effectiveness Manual/Surface-to-Surface: Effectiveness Data for Howitzer, 155-mm: M109 (U)
(C)FM 101-60-4	Joint Munitions Effectiveness Manual/Surface-to-Surface: Effectiveness Data for Howitzer, 8-inch: M110 (U)
(C)FM 101-60-5	Joint Munitions Effectiveness Manual/Surface-to-Surface: Effectiveness Data for Gun, 175-mm: M107 (U)

M-5. Joint Munitions Effectiveness Manuals—*Continued*

(C)FM 101-60-6	Joint Munitions Effectiveness Manual/Surface-to-Surface: Effectiveness Data for 5/38" Naval Twin-Gun Mount MK28, 32, and 38 with Gun Fire Control System MK37 (U)
(C)FM 101-60-7	Joint Munitions Effectiveness Manual/Surface-to-Surface: Effectiveness Data for Mortar 4.2-inch M30 (U)
(C)FM 101-60-8	Joint Munitions Effectiveness Manual/Surface-to-Surface: Effectiveness Data for Rocket 762-mm M50 (HONEST JOHN) (U)
(C)FM 101-60-9	Joint Munitions Effectiveness Manual/Surface-to-Surface: Effectiveness Data for 5"/54 Naval Single-Gun Mount MK42 with Gun Fire Control System MK68 (U)
(C)FM 101-60-12	Effectiveness Data for Tank Combat Full Tracked: 105-mm Gun M60A1 (U)
(C)FM 101-61-3	Joint Munitions Effectiveness Manual/Surface-to-Surface: Ammunition Reliability (U)
(C)FM 101-62-1	Joint Munitions Effectiveness Manual/Surface-to-Surface: Safe Distances for Fragmentary Munitions (U)
(C)FM 101-62-3	Joint Munitions Effectiveness Manual/Surface-to-Surface: Manual of Fragmentation Data (U)

M-6. Standardization Agreements (STANAG)

This manual is in accordance with the provisions of the following standardization agreements:

STANAG 2014	Operations Orders, Annexes to Operations Orders, Administrative/Logistic Orders
STANAG 2019	Military Symbols
STANAG 2043	Standard Procedures for Establishing Communications
STANAG 2082	Relief of Combat Troops
STANAG 2088	Battlefield Illumination
STANAG 2099*	Fire Coordination in Support of Land Forces
STANAG 2101	Principles and Procedures for Establishing Liaison

*Exceptions to this STANAG included in this manual are presently being staffed within USAFAS.

M-7. Department of the Army (DA) Forms

The following DA forms are available through normal AG Publications Supply channels.

4655	Target List Worksheet
4656	Scheduling Worksheet



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- Accuracy of Firing Means in Determining Most Suitable Weapon, L-6
- Accuracy/Responsiveness Improvements (FA), 8-6
 - Battery Computer System, 8-6
 - Field Artillery (FA) Meteorological Acquisition System (FAMAS), 8-6
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